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VON OGDEN VOGT'S "ART AND RELIGION"*

A REVIEW BY ALLEN B. POND, F. A. I. A.

IT may, at first blush, seem a bit odd that the Yale University Press should send to an architectural journal for review Mr. Vogt's "Art and Religion"—a book whose moving purpose is to present a plea for the rehabilitation of "Cultus" in the religious life of modern-minded men. But when, on turning the pages, one discovers that under the term "Cultus" Mr. Vogt includes, not merely creeds and rituals, but the entire external framework and accompaniment of religious expression and observance,—ritual, liturgy, music, sculpture, painting, stained glass and architecture,—one's startled query is abundantly answered. For as Mr. Vogt himself phrases it, "The book is an effort to assist the religious world to a recognition of the category of beauty as a primary and necessary element in the religious reconstruction of the new age."

Is art the veritable offspring of religion or has it merely been a willing handmaid in many times and many places, availing itself of the opportunity afforded by religion,—as it would and does of any other opportunity,—to make life and all its instrumentalities things of beauty? Were religion and art one and the same thing to primitive man and did they become differentiated in man's thought only when, after many years, he had reached a relatively advanced stage in his efforts at philosophical analysis? And even if art—or should one say artistry?—was invariably intertwined with religious expression and observance in the life of primitive man and, for that matter, of man far beyond the stage where he can fairly be characterized as primitive, is this historic intertwining to be interpreted as a proof either that art is or ever was substantially identical with religion, or even that art is only one aspect of a larger somewhat which we call religion? And if the adaptability of a certain subject matter to the purposes of both art and religion—coupled with an occasional unavoidable emotional contemporaneity—is not a sufficient explanation of the historic intertwining of art and religion, are we to find the key in the fact that both spring into being and attain to fullness of life in the field of emotion—of feeling and imagination—rather than in the field of the intellectual faculties, and that in the field of feeling and imagination they travel in part on the same emotional paths?

Would art, as an expression of man's emotional and imaginative life, inevitably have sprung into being and have ministered to his spiritual evolution, even in the entire absence of religion, if such an absence were conceivable? And did art, as I indeed believe, actually find its echo in the heart of primitive man and its expression in his handiwork before ever religion had reached the stage when, led by fear, it sought by the aid of art to thwart or bribe or propitiate the dread unknown? But if the appeal of beauty, the art impulse and artistic activity now have and, since man was man, have had a commanding and ennobling part in his life wholly independent of religion,—which, contrary to opinions cited by Mr. Vogt, I strongly hold to be the case,—how are we to explain the fact that thousands of clear-headed men, among them men of markedly agnostic turn of mind, know by their own experience that, if the esthetic emotion is stimulated to a sufficient degree of intensity, it passes directly over into a religious emotion and is converted into something that can only be defined as a religious experience?

Is it true that, though "the deeper joys of religion are its spiritual joys, trust, and peace, and hope, forgiveness and worthy labor," "it is the artistic side of religion which is the chief source of the enjoyment of it," and that, even in an age of such advanced culture as that upon which we are now entering, a religion which does not enlist the intimate and continuous co-operation of art will repel multitudes of men and these, not the stolid and the trifling, but the most finely and highly organized? Is it true that the Protestant church today and particularly those American denominational branches that have come to us by way of Puritanism are like to become sterile, in spite of their heredity of moral earnestness, just because they turned their backs on art, discarded pretty much all ritual and substituted exhortation and intellectual sparring matches in

* *Art and Religion, by Von Ogden Vogt. New Haven, Yale University Press.* 1921. *Net* $5.00.

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barren or ugly meeting houses for worship in a beautiful House of God?

And per contra, can art be other than trivial and shallow, unless the artist, full of the joy of beauty, not only uses his art to recreate that beauty which is the heritage of the past or to give expression to the superficial beauty of the present, but, living in the deeper tides of his time, with heightened imagination, apprehends and in forms of beauty gives body to the forward-reaching spirit of his own age?

And specifically as to Architecture,—what is its province in the domain of religion? Does man try to make temples and church buildings beautiful merely for his own esthetic satisfaction, or also and chiefly because he hopes that that beauty which his inmost being so passionately craves is also dear to Deity and will be credited to him as the offering of propitiation or as the paying of due honor? Or has this essay of man had issue in an unsought something, a by-product capable of exerting a subtile but powerful reflex influence on man himself? In short, has architecture itself a function in ministering to the religious life? Can it help to pave the way to the mood for worship? Has it an indispensable part to play in revitalizing and energizing religion? And, over and above the will to build beautiful buildings, what should the architect, as artist and as scholar, feel and know that will enable him the better to do his share in the creation of a building fit to be called the House of God?

Considerations and questionings such as these are either part and parcel of the subject matter of Mr. Vogt's pages or else inevitably arise in the reader's mind; and that one cannot agree with the author at every point,—and who can agree, in matters of pith and moment, with anybody at every point?—in no way detracts from one's keen and continuous pleasure in reading this admirable book. For though Mr. Vogt states his case and pleads his cause with the deep feeling of one wholly convinced of the soundness of his positions and of the vital importance of art to religion and of religion to the modern-minded man, he is entirely free from the vices of the advocate and from the intolerance that is so often the bane of those who speak in the name of religion.

As may be deduced from the form in which I have cast several of the questions raised by a perusal of Mr. Vogt's pages, I differ radically from the authorities whom he quotes, with apparent approval, on the subject of the identical origins of art and religion. I acknowledge the difficulty of reconciling the assertion of distinct origins with the admitted actuality of the phenomenon of translation of an esthetic emotion into a religious emotion. Yet, none the less, do I hold that the one,—art the child of beauty,—came by way of charm, delight, joy, love; the other,—religion the child of mystery and awe,—came by way of dread, misgiving, wonder; and that,—when dread gave place to hope, misgiving to trust, and wonder to worship,—it was possible for two emotional experiences, distinct at the root, to merge at the top—and this because, in its evolution, religion has moved toward art, not art toward religion.

At any rate, the intimate intertwining of art and religion is one of the outstanding facts of history; and that art has through the ages seized on the usages and observances of religion as a surpassing opportunity for its self-expression, or,—even more strongly the other way around,—that religion has so uniformly availed itself of the penetrating and puissant influence of art in the endeavor, at first, to transmit a compelling message to the dread environing powers and, later still, to draw to itself and hold the allegiance of the hearts of men, may well be urged as proof sufficient of a close spiritual kinship between art and religion—perhaps, as I have already intimated, through the fact that they move in part at least along the same channels of man's deepest emotional being. And, whatever may be the truth or error in Mr. Vogt's assumption of the identity of origins, his development and discussion of the theme of their historic co-partnership is based on a sound psychological foundation; and his thesis,—that a religion, which decries art or, ignoring it, fails to enlist its aid, is doomed ultimately to land on a side-track,—is, in my judgment, equally sound.

It hardly needs to be said that religion as conceived by Mr. Vogt is, although a lineal descendent, far removed, in the evolutionary process, from that fear of the unknown with its propitiatory rites that characterized primitive man. Nor should it be necessary to add that, in espousing the cause of beauty as an essential factor in religious education and experience, Mr. Vogt is not advocating a religion of light-heartedness growing out of light-mindedness—a universe stript of awe, a religion stript of austerity. "Beauty" he affirms, "is one of the three supreme categories of value" (pg. 23)—the others being truth and goodness—and "is one of the essential necessities of human existence." For man seeks through art not only to add beauty to the lesser instrumentalities and usages of his daily life, but even to add a splendor to greatness and further to enhance the nobility of that which is in its essence noble. On this highest plane beauty and art are not incompatible with man's loftiest spiritual life. For, as Mr. Vogt puts it, "to perceive beauty is to be moved by something of the same emotional course as attends the perception of Divinity. And to create beauty is in some sense to participate in the character of Divinity." In truth, "religion and art are alike in the impulse to recreate the world after the heart's desire." (pg. 32)—a beautiful conception, beautifully phrased.

In his introduction and subsequently Mr. Vogt

notes the lessening emphasis on the reliance on Art that came in with the Reformation, that reached its climax with the Puritan movement and that has spread its baleful influence with full force over Great Britain and America. Beyond question the divorce of art from religion was unfortunate for both religion and art; the result for art being for the time a restriction of its field and a temporary lowering of its spiritual level. But the hunger for beauty was unquenchable and art gradually adjusted itself to the situation and continued, in spite of the ban, to be a source of spiritual growth. The unhappy effect of this cleavage on religion is Mr. Vogt's theme through many pages. "Religion," he writes, "cannot complete her reformation until she has squared her experience not only with the Scientist and the Moralist but also with the Artist." For—"As there is a world of Science outside the church satisfied with its love of truth and a world of Morality outside the church seeking its own way of goodness, so there is a world of Art outside the church enjoying its life of beauty; and it is a very large world." (pg. 34). "The generation will soon be here which will refuse to worship in ugly buildings, * * ." And in this connection, by way of illustration, our author administers a resounding swat at that architectural abomination of Moab—the square church with its pulpit in the corner, flanked by yards of folding doors. And, by the way, was the inventor of this hideous scheme trying to corner the Deity or only to impound the parson?

Those, who make objection, as so often has been made, that religion is of the "spirit" and art of the "senses"—the flesh, and that the alleged support rendered by art is illusory, have to square their assertion with the emotional transfer to which I have made reference. Addressing himself to this objection Mr. Vogt writes (page 63): "However much we may desire to spiritualize our religion, we are not disembodied spirits, we are compact together of flesh and spirit—'Nor soul helps flesh more now, than flesh helps soul.'" And again, (page 56) in a paragraph whose profound significance should be pondered,—"But the spiritual life as a whole rises from the physical life. If it rises at last purely and freely, it none the less rises from the swathing fires of sensibility. And the kindling of the sense usually requires something tangible, touchable, visible. Spirituality is the great and desirable end; corporeality is the necessary means. Truth must be embodied to be realized; it must be incorporated to be understood. No religious movement has ever been forceful or popular without a rich corporeality. An image, a rite, a creed, a feeling, a feast, a vision, or a sacrament has always been used to embody its truth."

Following up his argument, Mr. Vogt quotes from an editorial in the "Outlook": "There is nothing today so essential to the world as its art. Even the prophet and teacher of religion cannot avail unless he either has in him the creative power of the artist or can enlist that creative power in the service of the ideas he promulgates."

If any reader of these pages is minded to characterize these dicta as the vaporings of a dreamer, I beg to reinforce the argument by reference to a work, which I judge has not come to Mr. Vogt's hand, viz. George Bourne's "The Ascending Effort," which is an appeal for a new religion as a means of giving effect to the otherwise infertile truths of science and for the energizing help of art in building up and making potent the needed new religion. After quoting Sir Francis Galton to the effect "that science by itself is infertile, and must be supplemented by conscience or transmuted into religion," Mr. Bourne continues: "No energy proceeds from simply being aware of things, and perceiving their identities and differences. The sources of power are to be sought not in acquaintance with facts, but in that spontaneous movement of the life-cells which, as it stirs imperiously in all our sub-conscious existence, gathers into passions and desires and resolves, and so at last issues its commands to society in the shape of religions." And, casting about for a way to call into being the desired "religion," Mr. Bourne comes to art—to art "that the Puritan views with so profound a suspicion * * . For its effect upon character is wrought insidiously through the cells and tissues of the body, so that those who come under its sway are as though changed by strange food, with their pulses aglow and their nerves aquiver with new desire. * * For though it sounds paradoxical, the intoxicating power of art is the very thing needed to give the desired effect to the doctrine of science. * * Excepting that science is new as a doctrine, there is nothing new, or at any rate unprecedented, in the proposed alliance; for wherever a conviction has swayed the world it has always been bourne into men's spirits on the wings of art. Christianity supplies an example."

Conceding that religion as a great human interest has lost ground,—what with the preoccupation of men with other and narrower interests and with the fact that religion has not kept pace with the intellectual, perhaps not even with the moral progress of mankind,—Mr. Vogt asks how religion is to go about it to attract and hold the attention of men. "Religion," he writes, "needs art to be impressive, to get a hearing. * * How shall it set forth its first appeal so that he who runs may read? * * At this point the fine art of building is the chief dependence and religion cannot dispense with it." Naturally, therefore, there are many allusions to architecture scattered through the book; and five chapters, XIX to XXIII both inclusive, are devoted primarily to architecture in its relation to the

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building of churches. That on "Architectural Style" analyzes the historic styles of the western world, with a particular view to their adaptability for the purposes of a modern church for a modern Christianity, and notes the gropings, if the word may be allowed, toward a new style. It is, perhaps, superfluous to make the comment that a writer who sets such store by beauty as a factor in the spiritual life and who places great emphasis on mysticism as a factor in the religious life is not going to be content with a jumble of ill-assorted features on the one side or with a bald meeting-house on the other. The chapter entitled "Structural Tone" is one of the most discerning pieces of constructive architectural discussion I have read in many a day. It, or something that makes its points as clearly and as cogently, should be a part of the instruction at every school of architecture and should be "appointed to be read" every semester in the offices of all architects who build or hope to build churches. The chapter on the "Chancel" will be welcomed by many American architects as an aid in bringing our puritan-sired stock back to a realization of something they never should have forgotten—that in a church a compelling mood toward the worship of God is, in the long run, of more importance than the brilliancy or persuasiveness of the preacher.

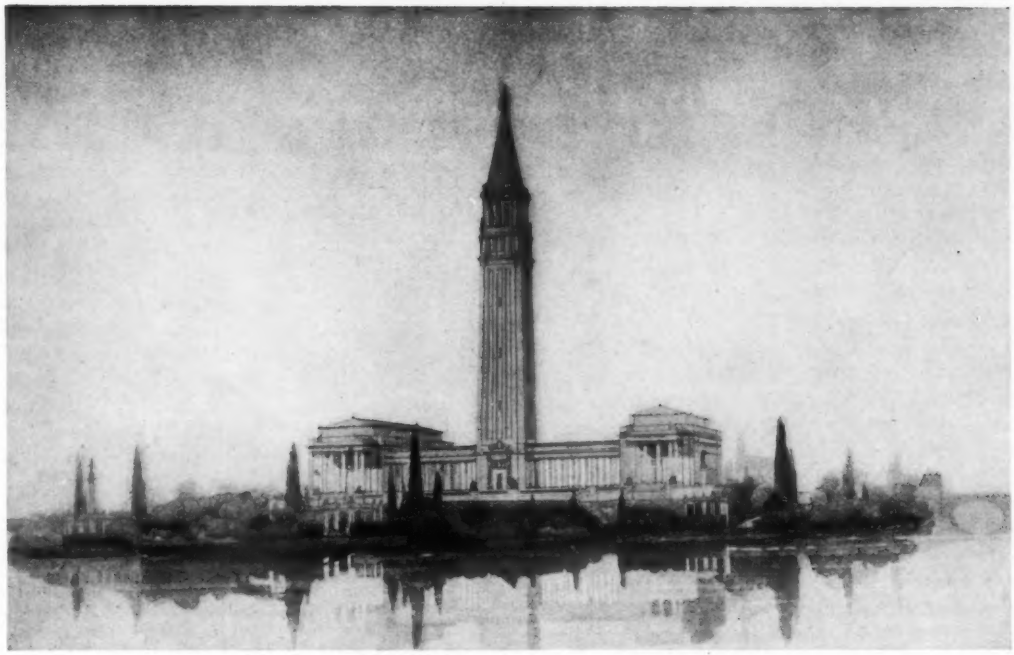
I have said that Mr. Vogt was wholly free from intolerance and from the vices of the advocate. Nowhere does this quality appear to better advantage than in the candor and the balance of mind with which he discusses the defects of ecclesiasticism on the one side, with its over-emphasis of and too great reliance on forms and symbols, and, on the other side, the shortcomings of those who over-emphasize the intellectual aspect of religion with a resultant concentration on matters of opinion to the exclusion of the emotions, the imagination, the will—as though men lived in a vacuum instead of in a phenomenal world pulsing with vivid life.

So wide has been the sweep of Mr. Vogt's research, so extensive and so acute his observation, and so clear is his thinking that I find it difficult to see how anyone can resist his conclusions while accepting his implied major premise—that we live in a universe informed by the presence of an indwelling spirit which concerns itself with the lives of men and to which men may lift up their hearts with the assurance of its comprehending sympathy. To all such the book is a challenge to re-organize religion—or should I rather say dogma and observance?—and place them firmly on grounds conformable to modern psychology and to a modern conception of an evolving universe. Mr. Vogt, however, notes the fact that there are, in these days numbers of men standing quite outside the Church. Of what interest will the book be to these folk who, unable to commit themselves to the major premise, are found sitting on the unbeliever's bench instead of in the Amen-corner? Urging the need of creeds that are not "finished," but rather are always open to "newer and later revelations of the spirit," Mr. Vogt adds—"For after all, the humility of agnosticism, so far from being inimical to worship, is perhaps its natural beginning."

Be this as it may, it is certain that those of us who are thoughtful agnostics must subscribe to Emerson's dictum that —"No statement of the Universe, can have any soundness, which does not admit its ascending effort," and must—when pondering on the mystery of life and its unfoldings—long to have faith in the moral integrity of the universe. And to these also Mr. Vogt's book, with its insight into the workings of the human heart and its championship of the "things of the spirit," will make a profound appeal.

Nothing but the necessary restrictions of space —for which my readers may well be grateful— restrains me from quoting and making comment on a hundred or more passages which I marked as I read and re-read the book—things admirably said or provocative of thought. For, to sum up what I hope I have made clear, Mr. Vogt's "Art and Religion" is admirably written, is interesting and highly suggestive from cover to cover, and—more than that—is timely, sane and wise. No thoughtful architect should omit to read it; and paradoxical as it may sound, an architect who is not thoughtful is no architect.

The format is most attractive; the book is so bound as to open well; the page tempts the eye. I noted some half dozen and more errata that got by the author and the proof reader and that should be corrected in a second printing.



Report of the Sub-Committee on the Form of Memorial to Soldiers, Sailors and Marines, to be Erected by the City of Boston

THE Committee appointed by the Mayor of Boston to submit plans for a memorial to be erected by the City to those who gave their lives in the Great War makes the following report. At the outset it submits the general principles which it thinks should be applied in the erection of a memorial and then it submits the plan which it proposes for the carrying out of those principles.

I.

America entered the war for a great spiritual cause—the defence of the liberty of the world. Not only the men in the service, not only the wives and the mothers and the fathers had the vision, but the plain men and women who in the past had only the outlook of daily pleasure—they, too, had the vision; all America had it. And because of the death and the suffering and the anguish endured for a great spiritual cause that vision must not be lost. It should be embodied beautifully and effectively in art so that in those far-off years when this war is forgotten America shall live at its supremest as Greece lives, not by its wars, but by its Parthenon; as the mediæval age lives, not by its kings and bishops, but by the art that embodied in architecture, painting and sculpture the great religious ideals of that age.

Your committee gave much consideration to the question that goes to the root of the whole matter, —should a memorial be a utility or a thing of the spirit? It received many suggestions of utilitarian objects; for instance, a boulevard through the tenement districts of the city or radiating from the center to the suburbs; a City Hall with incidental buildings; and buildings,—and these were many—for semi-private institutions dedicated to public use.

The committee was entirely prepared to admit that these and similar utilitarian objects are important civic institutions and should be built by those particularly interested in such objects. But it thought that such buildings would not themselves be memorials at all. They would and should be erected to house the object of the particular

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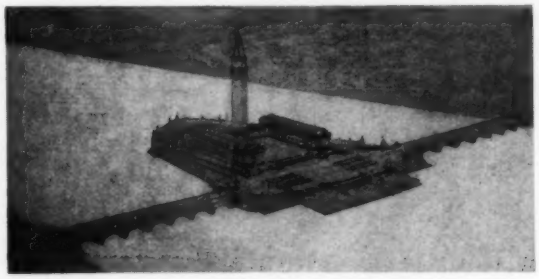
institution. For instance, the City Hall should house in the best possible way the business of the city, a very important object; the community building should house in the best possible way the collective interest of the community in the many and various affairs of the community,—a very natural and desirable thing. Each building might be exceedingly beautiful and effective for its given purpose. But neither would embody in itself the ideals with which America entered the war, the great ideals for which our youth went forward even unto death. Neither would embody these ideals any more than it would embody the religious aspirations of a nation or people.



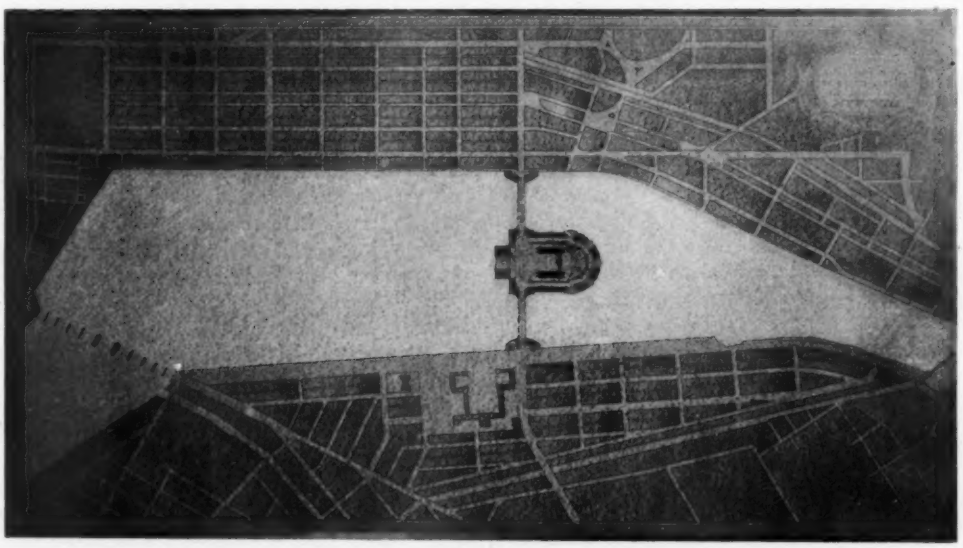
Aeroplane View of proposed island

Nor could such structures be made memorials merely by a name or dedicatory inscription. The meaning of a name is soon forgotten, a dedication is soon unnoticed. Thousands have trod Washington Street this day. How many have thought of Washington? Thousands have passed buildings over whose doorways dedications have been carved. How many have noticed them? How many can repeat accurately a single dedication in one of our great cities?

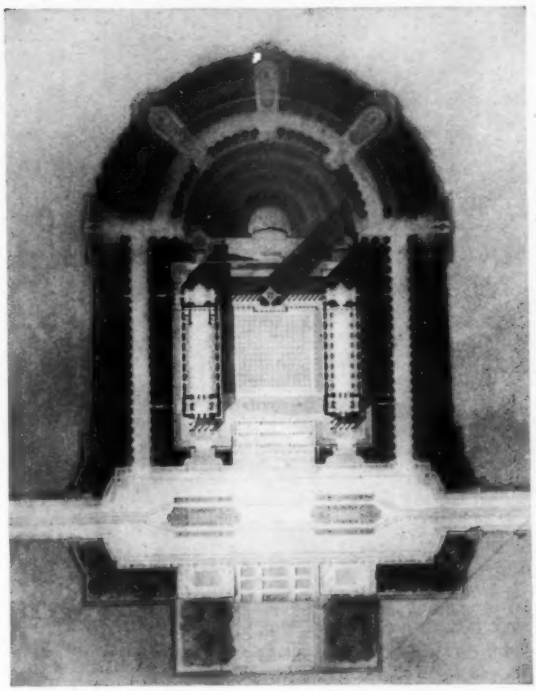
If these utilitarian institutions are not memorials in themselves, and cannot be made so by name or dedication, they should not be foisted on the great emotional desire of the public to contribute to suitable memorials. Your committee submits that buildings to house these utilitarian objects, however important they may be, should be provided either by the city and paid for by taxation, or by private institutions with the money that they can raise for their individual causes.

Yet a memorial used by the public would have a distinct advantage, for a memorial should not be a dead thing; on the contrary it should be a part of the life of the community and an inspiration to the citizens. But use should not be a primary object, it should be incidental and subordinate to the memorial — its setting or environment. A park or common, itself beautiful and convenient is a good instance of this, whether the memorial that dominates it is the flag and tablet of a village or the uplifting tower of a great city. The park or common has the advantage over the civic building that it is used far more largely by the public. It has the advantage over the boulevard in that it gives to a far greater degree the opportunity for unhurried and unjostled contemplation.

Turning away from the so-called memorials which are really in substance and in form utilitarian objects and taking up memorials in the true sense of the word, your committee gave much consideration to the question of what phase of the



Plan of the proposed island to be built in the Charles River Basin between Boston and Cambridge. The island faces easterly down the Charles River Basin. The bridge from the lower half of the picture leads from Boston and thence from the island to Cambridge. The outline just at the right of the Cambridge end of the bridge shows the location of the buildings of the Massachusetts Institute of Technology



Ground plan

war should be embodied, for war has many and varied phases and the memorials of those phases should be correspondingly many and varied. For instance, we may wish to memorialize the great human qualities of courage and suffering, felt on both sides of the Atlantic, for they are great human qualities: thus the sculptured figure of the man who leads the charge across No-Man's-Land may express courage, while that of the bowed and broken mother may express suffering. We may wish to memorialize the triumph over our enemies as in those splendid Roman arches that symbolize the power and the dignity and the triumph of ancient Rome,—the spirit that their triumphal processions manifested with their captives. Or, lastly, we may wish to memorialize, as the committee hopes, neither courage, nor suffering, nor triumph, but something which transcends them,—the great spiritual ideals of right, justice and liberty with which America entered the war. Your committee hopes that Boston will see to it that America lives an inspiration to all ages through a memorial that embodies beautifully and effectively these great ideals.

II.

In full belief in these general principles your committee submits the following plan with diagrams of the memorial which it thinks should be erected.

(1) The plan proposes that an island of perhaps ten acres shall be built in the Charles River contiguous to at least the western side of Harvard Bridge. The site for a beautiful memorial could hardly be surpassed. The convenience of access is assured by contiguity to the Bridge, for Massachusetts Avenue is destined to be more and more the great north and south thoroughfare of the city. There would be practically no cost for the land for the island, only for reclamation, as it would presumably be made out of land dredged from the Basin. Moreover, it will be necessary in the near future to rebuild Harvard Bridge, and an island which will shorten this bridge 800 or 1,000 feet will materially lessen the cost of the two bridges on either side of it.

Westerly Front

(2) Upon this island the plan proposes a high tower rising from a colonnade and containing a great carillon or chime of bells. The tower would have somewhat the same uplifting spiritual dominion over its environment that a cathedral has over a countryside, or that a New England church spire has over its village. It will be the manifestation of a great spiritual aspiration; and if well carried out will always embody the beauty and inspiration of a great ideal. Yet this beauty and inspiration can reach the heart not only

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through the eyes but through the ears. So the plan proposes that a great carillon or chime of bells be installed in the belfry of the tower. The sudden although infrequent drifting of music of a high spiritual significance over the river and far into the city would reach many whose thoughts are dwelling on vastly different things. It would arrest and appeal. Traditions might easily grow under it. The tradition of raising the hat as the flag goes by is of distinct value in developing an expression of true patriotism, and yet it is the development of very recent years.

(3) In pursuance of the statement of general principles made above, the plan proposes two utilities both important yet both incidental and subordinate to the memorial:—

(*a*) The erection of an open air auditorium west of the tower capable of holding a very large number of people, gathered together for objects harmonious with the object of the memorial; very likely gathered in the summer from all parts of the country, for instance, the meetings of the Veteran Associations. The fact that the use of a very large auditorium would not be frequent and that the cost of erecting it would be very great, precludes, if nothing else does, the erection of it as a part of the memorial.

(*b*) The development of the residue of the island with trees and shrubs and grass, making with its presumably indented shore line a beautiful water park open to all the public,—far and away more beautiful than the Esplanade is with its barrenness and dazzling glare.

The committee believes that the memorial proposed could be erected at a total cost of not over $2,000,000.

The committee's drawings incorporate, in connection with the memorial which it recommends should be built by the city, two wings extending toward the east to contain units for the state or other organizations if they desire to co-operate. The wings might contain a small auditorium, a war museum, a war library, and records.

Charles A. Coolidge, Chairman; John K. Allen, Frank W. Benson, Ralph A. Cram, Cyrus E. Dallin, Morris Gray, Charles D. Maginnis, A. A. Shurtleff, R. Clipston Sturgis, C. Howard Walker.

Easterly front

A SIMPLE FORM OF COMPETITION

By Comparison of Evidence of Ability and Experience Based upon Record of Work Actually Performed

By THOMAS CRANE YOUNG

THE difference between this and the usual form of architectural competition lies in the fact that instead of submitting for judgment a set of specially prepared drawings intended to solve a stated problem, the candidates submit photographs, documents, and information as to work already performed. Such data, if reviewed by an expert, would afford at least equally valuable material upon which to base a sound judgment as that obtained in the usual way.

For example: An Owner (one instituting a competition) desiring to choose an architect would first retain the services of a Professional Adviser (as defined in the American Institute Code.) He would prepare an invitation and program stating the conditions of the competition, together with a *questionnaire* to be filled out and signed by the competitor, giving information as to education and experience in conducting building operations, photographs of buildings of which the candidate is author, set of working drawings and specifications used in such a building, or other information useful in effecting a judgment of the qualifications of the candidate satisfactorily to conduct the work contemplated. When all of the information collected in the manner described has been received by the Owner, it would be turned over to the Professional Adviser who would examine and compare same and advise the Owner, in a written report, as to the relative merits of the candidates.

This method of selection seems to have merit where the object of the competition is the choice of an individual (or firm) best qualified to carry to a successful conclusion the project under consideration and not the determination of a definite plan.

Such a form would enable the Owner to acquire information upon which to base a choice, covering *all* phases of an architect's work, and at no expense except for the services of the Professional Adviser. It would enable the Owner to show good and sufficient reason for the choice when made. Dissension over the qualifications of rival candidates would be avoided. The competitors would be assured of consideration, by an expert, of their qualifications, without discrimination, and at a mere nominal expense. Criticism by unsuccessful competitors would be minimized or eliminated.

A competition of the sort described was recently held in St. Louis with satisfactory results. As an example, the questionnaire used in that particular case is given herewith.

QUESTIONNAIRE

Evidence of Ability and Experience

General Character of Evidence. The following evidence, submitted in the form of separate exhibits as described below, will be received by the Building Committee and examined by the Professional Adviser.

The word "you" as used below means either an individual acting as principal or a firm in which the individual is or was a principal.

Exhibit "A"

Professional Training and Experience

(a) Statement of your professional school training.

(b) Statement of your professional experience before entering independent practice. Give the name and location of architects with whom you were employed.

(c) List of buildings, not exceeding five, for which you were mainly responsible while in employ of others; for each give the name of employer and approximate date of construction.

(d) Were you designer or engineer, or both?

Exhibit "B"

Building Executed. Names of not more than five buildings which you consider your best work and which were executed by you as principal. In each case give the name of the designer and the structural, mechanical and electrical engineers, the name of the owner and of the contracting builder, the location of the building and the approximate date of construction. One of the buildings, at least, should be in or near ....., where it can be inspected.

Exhibit "C"

Photographs of Executed Work. Photographs of not more than five buildings preferably those described in Exhibit "B". These shall be of uniform size, about 8″x 10″, and mounted on 10″ x 14″ card mounts, unframed. (The purpose of these photographs is mainly to show evidence of character and quality of design.)

If desired, include a criticism of the buildings illustrated or explanation of the design, includ-

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ing features for which you do not consider yourself responsible, or which you would have changed if given opportunity.

EXHIBIT "D"

Office Practice

(a) Is designing done by firm member or employee? Name of chief designer mainly responsible for recent work, giving also name of building.

(b) Name of designer who would be responsible in largest measure for the design of the contemplated ... in case you were appointed architect.

(c) Is structural engineering done by firm member? Name of structural engineer responsible for recent work, giving also names of buildings.

(d) Is mechanical engineering done by firm member? Name of mechanical engineer responsible for recent work, giving also names of buildings.

(e) Is electrical engineering done by firm member? Name of electrical engineer responsible for recent work, giving also names of buildings.

(f) Is any of your engineering work done by material dealers or sub-contractors?

EXHIBIT "E"

Office Organization

(a) Is your firm organized as to special fields of duty for principals?

(b) What duties in general are allotted to the different members?

(c) Is a bookkeeper regularly employed by your firm? Have you an organized accounting system? Was your system installed by a Certified Accountant? Name of Accountant. Are your books regularly audited by a Certified Accountant?

(d) If employed as architect for the proposed ....., would you be able to execute the work with your present scheme of organization and business system?

(e) What new departments, if any, would you add to your organization?

EXHIBIT "F"

Working Drawings and Specifications. Complete set of contract drawings and specifications including general, structural, mechanical and electrical drawings and specifications for one building which you consider representative of your best work.

These may be originals or reproductions.

EXHIBIT "G"

Additional Statement. Any desired statement of experience or ability not covered in the above exhibits.

Form and Delivery of Exhibits. Written exhibits shall be typewritten on plain paper, letter size, and shall be confined strictly to the topic named, which topics shall be arranged in the order in which they appear and shall bear the signature of the individual or firm submitting the same. Each of the above exhibits shall be enclosed in a separate sealed package, each marked (Name of Building) and Exhibit "A", Exhibit "B", etc., as the case may be. These packages shall contain no other exterior marking. The separate exhibits shall then be wrapped or bound together in a single sealed package and addressed to (Name of Chairman of Building Committee) and delivered to (address) on or before the.... day of ....., 1922.

(Signed)

.....
(By members of Building Committee).

.....
Professional Adviser.

Dated .....

THE QUANTITY SURVEY—WHAT IT IS AND WHAT IT OFFERS*

Being the First of a Series of Articles Discussing the Various Steps in the Preparation and Use of a Quantity Survey

By Wm. GRAVES SMITH

President of The Quantity Survey Company

A QUANTITY survey organization can point out to an architect wherein a set of drawings and the specifications for a building, the basis of a building contract, are incomplete, or indefinite, or contradictory, or erroneous. Unless a survey is made, such faults may be called to his attention in an unpleasant way in the shape of demands for extras or concessions. The point is that every architect's office may at any time suffer from such causes simply because draftsmen and specification writers are not infallible. The best of them occasionally fail exactly to register their intentions.

A quantity survey organization offers an unprejudiced, impartial, disinterested, critical examination of the basis of the building contract. Making a quantity survey is a test for completeness and definiteness. The surveyor's office is the proving ground of drawings and specifications for constructive purposes. Making a survey is like making a complete model. The surveyors mentally build every part of the building. If there is insufficient information to do so, or if anything is indefinite or contradictory, or erroneous, the architect is consulted. His decision is incorporated in the survey quantities. If changes should be made in specifications or plans, the architect has an opportunity to make them before they are submitted to bidders. The bidders collectively might discover all the items taken up by the surveyors but they would not consult with the architect about them. The result would be lack of uniformity as to interpretation, and variously inaccurate quantities as to the basis of bids.

There are all sorts of things that may not be caught in the checking up of the drawings and specifications in an architect's office. The draftsmen or the specification writers are too familiar with a job to give it the best check. They know what they intend to show and believe they have done so. The surveyor studies to find out if the man who must execute the design has all the information he needs in order to know exactly what must be built. Either each contractor bidder must do this himself, or some competent go-between like the surveyor who can take his point of view must do it for him.

If an architect wishes to be sure that all bidders understand exactly what must be delivered under contract and thus secure bids on uniformly accurate data, he must have a quantity survey made and use it as the basis of bids.

There have been many instances where the check given by the surveyor has saved several times its cost. The most common faults are the overlapping of work, as specified for the various sub-contractors. The easiest mistake to make is apparently failure to state correctly in the specifications just what the writer has in mind. For example, a glazing specification intended to cover only interior partitions and doors was so worded that any bidder would easily have construed it to mean the glazing for the entire building. A visit to the job would not have enlightened him, because the exterior glazing had not been done although it had been bought. This item involved several thousand dollars,—several times the cost of the complete survey, which was unquestionably saved by having the error pointed out by the surveyor and corrected before asking for bids.

The value of a surveyor's check in helping an architect perfect his drawings and specifications cannot unfortunately be used by an architect as an argument with a client as a reason for having a quantity survey. But it should be an incentive to architects to secure surveys, and fortunately there are other sufficient benefits and economies resulting from the use of surveys to make their use a matter of sound business.

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* *The author of these articles invites letters from readers embodying criticism and a general discussion of all phases of the Quantity Survey. These communications will be answered and discussed in future articles.*

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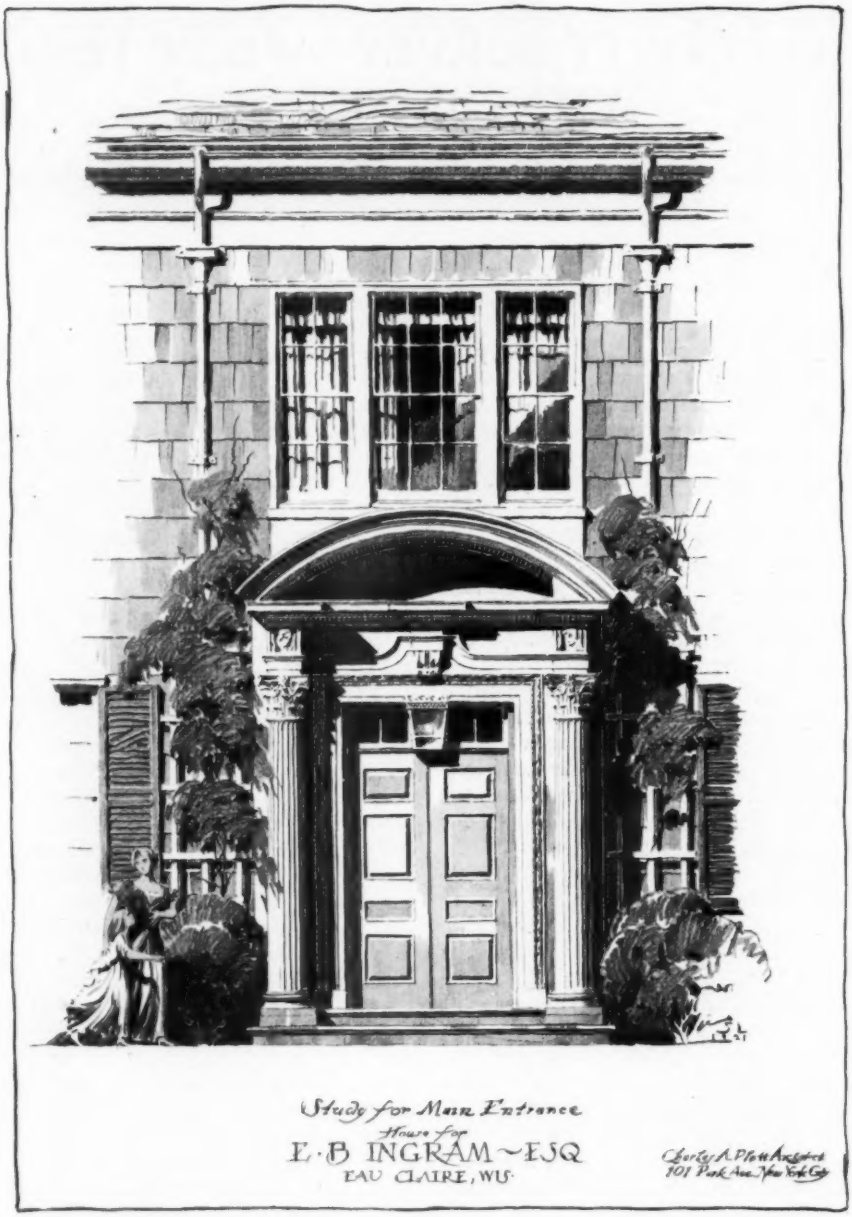

REPRODUCTION OF A PENCIL SKETCH FROM THE OFFICE OF
CHARLES A. PLATT, ARCHITECT

·EDITORIAL·COMMENT·

PERHAPS THE FIRST ART SOCIETY to inaugurate traveling exhibitions was the National Sculpture Society. The first of these peripatetic showings started on its travels some fifteen years ago and was instantly successful. They not only served a valuable professional purpose, but they also made it possible for the art-loving people in the smaller cities where these small pieces of sculpture were exhibited to become educated in the fine decorative possibilities of the sculptor's art. Many sales were made. The war caused a suspension of the traveling exhibitions.

It is gratifying to learn of the activities of The American Federation of Arts in the matter of traveling exhibitions. Collections of oils and watercolors, prints, posters, photographs and etchings are being assembled and started on their travels. Requests for these exhibitions have been received from towns and cities from coast to coast. Their educational value may not be over-estimated.

Why not traveling exhibitions of architecture? The fact that the Own Your Home exhibition held annually in New York and Chicago attract large numbers of people is evidence of the widespread interest. Carefully selected, easily transportable small collections of architectural work would be eagerly accepted by small cities all over this country. The motive of such exhibitions would be purely educational. There would be no sales as in collections of the painter's and the sculptor's art. But there would be a growing appreciation of good architecture.

The Architectural League of New York, in its splendidly maintained efforts to encourage craftsmanship, could select from its exhibition just opened, material for a traveling exhibition that would have the highest educational value. The expense would be insignificant in proportion to the good results. Every community desiring such an exhibition, would gladly pay the small cost of transportation.

* * *

AT A RECENT MEETING OF THE Royal Institute of British Architects, Mr. Thomas E. Collcutt, past president of the Institute, read a paper on A Plea for a Broader Conception of Architectural Education.

Mr. Collcutt stated that while architects, more than any other body of men, are suffering from the effects of war, and while the future for activity of practice is gloomy, students and yet more students are encouraged to enter the architectural schools. It was pointed out that in the *Ecole des Beaux-Arts,* but ten per cent of applicants were permitted to enter. Mr. Collcutt suggested that no student should be finally accepted unless he can show, on a short probation, that he has a peculiar natural aptitude or tendency to architecture above any other calling. This "aptitude" should be ascertained by a body of examiners independent of the schools. Of course remarks Mr. Collcutt, such an examination should be confined to architecture; steel construction and perspective coloring should not be considered.

We might very well pursue a similar course in this country and eliminate the "misfits" that are cumbering the profession.

It is interesting to note the method of examinations proposed.

* * *

THE FACTORS WHICH MORE LARGEly enter into the problem of building construction are, according to a forecast of the building outlook during the coming year, issued by the Committee on Statistics and Standards of the Chamber of Commerce of the United States: high price of materials, high price of labor and the matter of obtaining funds for construction. The present prices of materials are regarded as the most favorable, but, to quote the report, "the matter of too high priced labor does not stack up so well as that of material, but there is a general belief that not only are matters improving in this direction, but when springtime comes the long period of probable idleness of labor will naturally tend to bring about a much more favorable solution of this problem than is now presented." In some sections of the country the matter of obtaining money for building construction is still a difficult problem.

* * *

IN A RECENT ISSUE OF THE JOURNAL *of the Royal Institute of British Architects* Mr. F. Welman contributes an article on Capitals and Bases: A Theory of Their Evolution. Mr. Welman treats of the earliest capitals and bases as denoting the beginnings of architecture, and states that in some form or other, they have been adopted by every established school of design and their contemporary use is practically universal.

In an analysis of these architectural features, he deduces that the only function they could exercise in a stone construction is that of spreading courses, and that in view of their normal inadequacy in that respect, he believes it is obvious that they were not designed for the purpose and they cannot be regarded as "attributive" to it. Further, that as capitals and bases are not accessory to a stone construction, it is assumed that they are reproductions of members accessory to

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the prototype construction of reed or timber columns. He then goes on to advance the somewhat original contention that the function of members at the extremities of such columns would obviously be that of damp-proofing and, therefore, it is concluded that the primary "capitals" and "bases" were damp-courses and that stone examples are the later conventionalized reproduction of the same.

It will, therefore, be seen that Mr. Welman attributes the origin of capitals and their bases to one purely utilitarian, and not, as is commonly supposed, a decorative or ornamental feature. "In short" states Mr. Welman, "the primary damp courses are indicated to have been 'puddings' of bitumen."

* * *

THE ARCHITECT'S JOURNAL, OF LONdon, in an editorial in a recent issue, states that there is an indication of a "back to the road" movement in England that will give railway directors some serious problems to consider. Motor vehicle routes are, it is stated, being established, and competing seriously for both passenger and freight traffic. In this new movement there is entailed more than the lowering of fares and freight rates. The efficiency of all transportation, quickness of despatch, and promptness of delivery combined with lower freight rates, menaces the ordinary local triffic of railway transportation.

Further, *The Journal* sees in these conditions a possibility that the country house will be differently designed and differently situated, and that motor vehicles may possibly do for the railroads what the railroads did to the stage coaches,—render them obsolete.

This heavy traffic will naturally work a very decided change in road construction, and will provide new problems for the road engineer and also new problems for the governments to consider in the charges for maintenance.

During the war the necessity for quick transportation in the United States of material from inland towns to the coast made it necessary to develop motor routes which efficiently served during a great emergency. Long hauls with heavy loads were common, and the congestion of railway lines was greatly relieved by these motor routes. Since the Armistice, however, conditions have decidedly changed and these motor lanes of traffic no longer exist, but it seemed that England, learning a lesson from her conditions, has not only maintained in a great many instances these motor lines of traffic, but proposes to increase their number and in this *The Journal* sees a menace to the usual railroad traffic.

St. Cloud

(From the Photograph by Robert M. Blackall)

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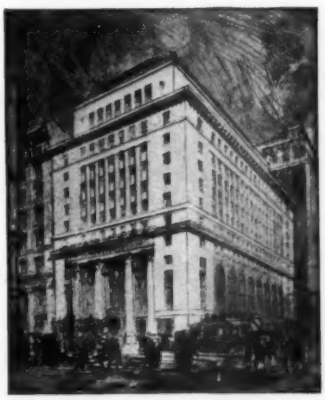

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Convention of the American Ceramic Society

THE twenty-fourth annual convention of The American Ceramic Society will be held at the Hotel Statler, St. Louis, Mo., February 27 to March 3, both inclusive. A program has been outlined that should prove of unusual interest to everyone interested in ceramics.

Medal to Stimulate Architecture

AN interesting attempt to stimulate architectural merit in private or public buildings, monuments or other structures, is revealed in the recent offer of J. Harleston Parker to present to the city of Boston, Mass., a gift of $1,000, the income to be used for the presentation of a gold medal to architects deemed worthy of it from time to time. Mr. Parker wishes the medal known as the Harleston Parker Medal, in honor of his late father, a citizen of Boston, and stipulates that it shall be presented by the mayor, with the approval of the Boston Society of Architects or its successors, in no case at more than a three-year interval.

If the City Council accepts the gift, Mr. Parker will have a design and dies made, subject to the approval of the mayor and the Boston Society of Architects, such design and dies to remain unchanged. It is provided that if there is any unexpended income, from time to time, it shall be spent by the mayor, with the approval of the Society, toward stimulating the improvement of architecture in Boston in any suitable manner.

The Founding of The Associated Technical Societies of Detroit

AN affiliation of all architectural, engineering and other technical societies of Detroit has recently been effected. The twelve societies represented in this affiliation are the following: Detroit Section, American Society of Civil Engineers; Detroit Chapter, American Association of Engineers; Michigan Chapter, American Society of Heating and Ventilating Engineers; Detroit Post, Society of American Military Engineers; Detroit Section, American Society of Mechanical Engineers; Detroit-Ann Arbor Section, American Institute of Electrical Engineers; American Institute of Chemical Engineers; Detroit Engineering Society; American Chemical Society and Detroit Chemists; Michigan Chapter, American Institute of Architects; Detroit Section, Michigan Society of Architects; Detroit Chapter, American Society of Steel Treating.

The engineers, architects, chemists and other technical men of Detroit have for a long time felt the need of one central association to represent the combined interests of professional men. A central office will be established for conducting the business of the several societies. In the past, these societies each held a number of meetings throughout the year, most of them once a month and some of them two and three times a month, these meetings often occurring on similar dates. This conflict will hereafter be avoided as the office of the new association will schedule the dates of the meetings of all the technical societies. The Associated Technical Societies of Detroit will provide one meeting each month and this will be under the management of one of the member societies.

The officers elected for 1922 are as follows: Chairman, P. W. Keating; vice-chairman, A. A. Meyer; secretary-treasurer, Walter R. Meier.

Color for the Hospital

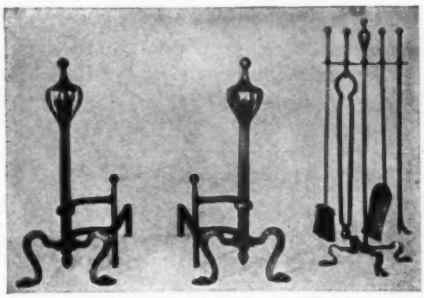
IN one of its recent issues *The Modern Hospital,* replying to the query of an architect, states that the most desirable color scheme for walls and ceilings in a hospital appears to be a cream or buff shade or light green. In localities where there are many dark or rainy days, the light buff or cream for walls and ceilings is the most generally used.

Against Billboard Ads

THE Wisconsin Federation of Women's Clubs, at its annual convention recently held in Appleton, Wis., launched a campaign against billboards along highways. It is stated in resolutions addressed to the State Highway Commission and members of the Legislature that the roads are not the place for advertising signs, because of their detriment to natural beauty, and it is suggested that the newspaper is the more legitimate medium through which the retail merchant should seek patronage. Similar action on the part of other large bodies in different sections of the country would do much to remove this existing evil.

Acoustic Vases

IT is learned from foreign press reports that an interesting discovery has been made among the ruins of ancient churches in France. When the wreckage of the largest of these was cleared away, there were found several pottery vessels, which, it was thought must have been hidden or lost in the crypts. Experts, however, claim that they are "acoustic vases" which were set in the walls to give greater resonance to the building. This practice, it is stated, has long been known to antiquarians.



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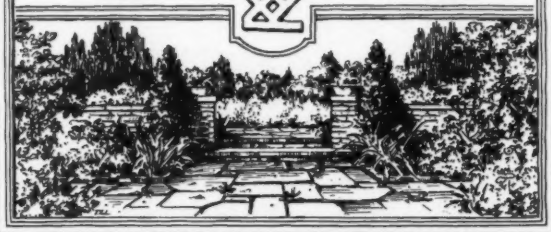

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Paris Prize of the Society of Beaux-Arts Architects

THE first preliminary competition of the 15th Paris Prize, open to all citizens of the United States under twenty-nine (29) years of age on July 1, 1922, will be held on February 25, 1922.

For full particulars apply to Chairman at 126 East Seventy-fifth Street, New York City.

Reunion of Atelier Masqueray

THERE is to be a reunion of all the Atelier Masqueray Students some time in April. In considering the influence that Masqueray had in the early training of many draftsmen and the pioneer work that he did in especially Beaux Arts training, this reunion will be very interesting and it should line up many men who have become leaders in their profession.

L. E. Jallade, 129 Lexington Avenue, New York City, would like very much to have the names and addresses of any of these former students who have not received an invitation to this dinner. It is the purpose of the Committee to include everybody that ever attended the Atelier.

Bronze Tablet Presented to Armour Institute of Technology

TO commemorate the eminent service rendered in the cause of fire prevention by its late president, Dr. Frank W. Gunsaulus, a large bronze tablet was recently presented to the Armour Institute of Technology, Chicago, by the Fire Underwriters' Association of the Northwest. It was largely through Dr. Gunsaulus' efforts that the present Department of Fire Protection Engineering was established at the Institute. This tablet bears a sculptured head of Dr. Gunsaulus and an inscription to his memory.

University of Pittsburgh Receives Gift of Laboratory Site

A. W. MELLON, Secretary of the Treasury, and his brother, R. B. Mellon, have given to the University of Pittsburgh, a plot of land acquired at a cost of $1,500,000. The property, some fourteen acres, lies between the University and Carnegie Institute, and on it will be erected laboratories dedicated to chemistry, physics, mathematics and biology.

The gift supplements a former gift of the Mellons which some years ago resulted in the opening of the Mellon Institute of Research, as a part of the University.

The School Population

APPROXIMATELY 33,000,000 persons are listed in the school population of the United States. The number regularly registered in day schools, however, is but slightly in excess of 23,000,000.

Fire Loss in the United States

THE average fire loss in the United States during the last ten years increased 68.59 per cent. The increase in population was 20.67 per cent.

Home Owners

IN New York City, according to *Greater New York,* only one home in eight is owned by the family living in it, the percentage ranging from two in Manhattan Borough to forty-two in Richmond.

New Orleans Organizes a Beaux-Arts Atelier

A BEAUX-ARTS Atelier has recently been organized at New Orleans, La., by Professor N. C. Curtis, to be known as the Atelier Curtis. It will enter the competitions of, and work under, the rules of the Beaux-Arts Architects. B. J. Dulany was elected massier, president and treasurer, and Fritz Pharam, sous-massier, vice-president and secretary.

Bust of Charles Follen McKim Presented to American Academy at Rome

THE American Academy at Rome has recently received a portrait bust in bronze of the late Charles F. McKim by Albin Polasek, and a fountain designed and modeled by Paul Manship. Both Mr. Manship and Mr. Polasek formerly held fellowships in the Academy.

New Art Prize Established

HENRY W. WATROUS, vice-president of the National Academy of Design, recently announced the establishment of the Ellin P Speyer memorial prize for paintings or sculpture of animals. He said:

"It is the gift of James Speyer in memory of his wife, who was the president of the New York Women's League for Animals. Mr. Speyer has given the academy $5,000, the annual income of which under the terms of the gift will be awarded for a painting or sculpture portraying an act of humanity toward animals, or a painting or sculpture of animals."

It is expected that the first award of the new Speyer prize will be made at the spring exhibition of the academy.

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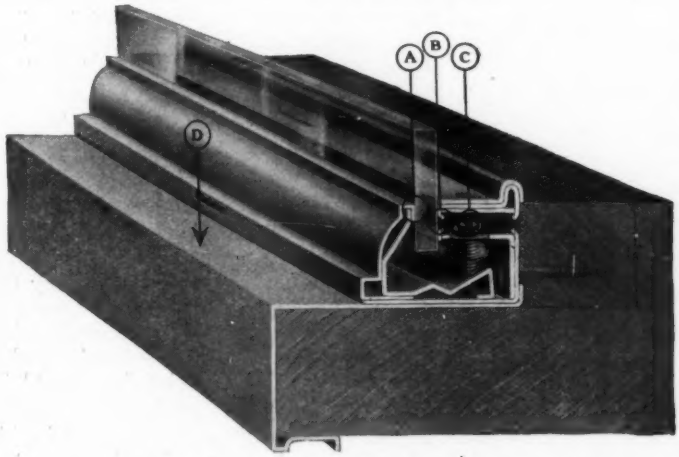

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A is the point where the outer member presses against the glass, when the delicate watchlike turning of the Key at C brings the glass automatically into contact with the rabbet of gutter B sliding on the anti-friction Murnane Self-Adjusting Setting Block.

The Sill Covering D extends from the inner side of the rabbet to the lower edge of the face, eliminating joints—perpendicular screws or nails—positively protecting the wood against deterioration, for leakage is impossible.

Strict adherence to this specification would mean that millions of dollars would be saved - to the insurance companies as well as to the store owners.

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BOOK NOTES

English Homes*

IT could be easily inferred that the stately English houses of the early Georgian Period, (1714-1760) had been so thoroughly illustrated and described that there remained none that would be worth the bookmaker's attention. But Mr. Tipping, undaunted by the efforts of authors and illustrators who have preceded him, has been able to find and place before readers a series of illustrations that in most instances have the freshness of novelty. About these pictures he has woven a descriptive text which places before the reader, and particularly the architect, a large amount of very valuable matter.

The illustrations comprise some twenty-four houses and the accompanying plates are (with the exception of text cuts) full page in size. The photography is excellent and the mechanical appearance of the book is very good. While the large plates afford the best opportunity for a study of the details, the arrangement of the text is not so fortunate. The lines of type running clear across the page, except where broken by illustrations, are very difficult to read and one soon feels the eye strain that is imposed.

The architects, as far as attributed, represented in this work are Francis Smith (1721), Inego Jones (*circa* 1630), Colin Campbell (1724), Sanderson Miller (1759) and Thomas Coke (1734).

This book would be a desirable addition to the architect's working library.

* *English Homes, Period V, Vol. I. Early Georgian (1714-1760). By H. Avray Tipping, M.A., F.S.A. Full cloth, 357 pp., size* 11x15, *with many illustrations. Price* $25.00. *New York, Charles Scribner's Sons. London, Country Life and George Newnes, Ltd.*

Architectural Drawing

MR. CLINTON V. BUSH, Director of Industrial Education, Olean, N. Y., has added another book to the already long list of elementary books on architectural drawing. It is really a work for architectural and manual training school students on the making of detail drawings for dwelling houses built of wood. The set is comprised of two series of plates—A and B. The plates in Series A consist of isometric views accompanied by explanatory notes. The plates in Series B consist of the finished detail drawings of the problems in Series A. The work is well conceived and well carried out.

The author however uses 2 in. x 5 in. studs and sills. This is a size found in such a small section of the United States that few architects and builders are aware that this size is cut. The suggestion is made in the text that 2 in. x 4 in. studs may be substituted, but one is apt to form an unfavorable opinion from the unfamiliar dimensions given on the drawing. The author uses 2 in. x 2 in. cross-bridging on 2 in. x 8 in. floor joists, with a note calling for cross-bridging in center of floor span. This is liable to give students a fixed idea and in the text there should be some qualifying notes. The details at the lower ends of studding where they rest on sills may be correct for some parts of the country, but they do not conform to general practice. In the hands of a teacher who has had practical experience the book should be useful.

A Portfolio of Spanish Interiors and Furniture*

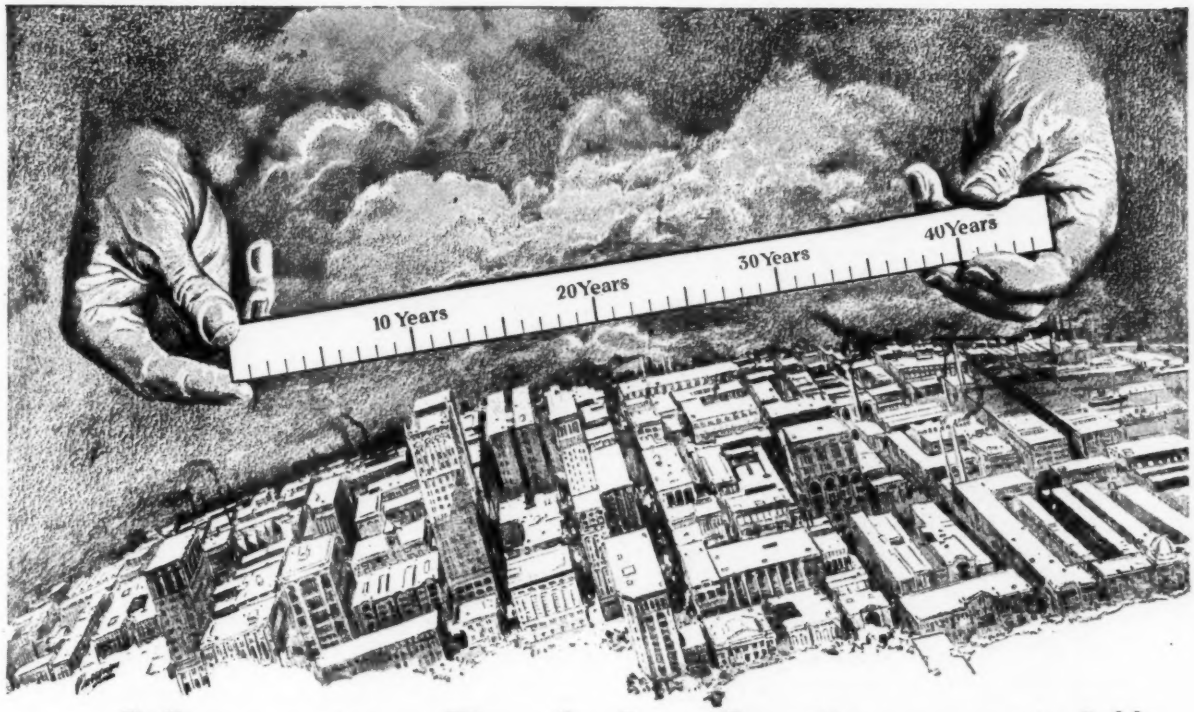
THE first portfolio of a series of four on Spanish Interiors and Furniture, photographed and drawn by Arthur Byne and described by Mildred Stapley, both corresponding members of the Hispanic Society of America has been received.

Probably there are no two people in this country who can more competently collaborate in a work of this kind. Mr. Byne's long association with the architectural profession and his pronounced ability as a designer have given him just the training that would enable him intelligently to select in his travels through Spain, exactly the sort of material that an architect would want to have. He has shown in the photographs that comprise this first portfolio that he has been able to select the character of material that would be most valuable to the architect in this country, and to avoid any attempt to incorporate in his pictures the florid and unattractive elements that often characterize Spanish interiors and furniture design.

Mrs. Stapley has also traveled extensively in Spain and throughout Europe and the text which she has furnished to accompany Mr. Byne's pictures, supplements them in exactly the right way.

This series of portfolios will be exceedingly valuable to architects and designers.

* *Spanish Interiors and Furniture. Photographs and Drawings by Arthur Byne, with text by Mildred Stapley. 200 plates; size approximately* 8 x 10 *in., in four parts of 50 plates each. Price* $40.00. *New York, William Helburn, Inc.*



Measuring Roofs by the "year-stick"

AFTER all's said and done, there's only one way to measure roof value—that's by the "year-stick."

For when choosing a roof, the really important question is: "Which roof will last longest with the least trouble and expense for upkeep?"

In the light of long experience, the logical answer is: The Barrett Specification Roof. For in every section of the country there are roofs of this type that have been in service for thirty, forty or more years, and are still in good condition.

Despite *proved* durability and freedom from maintenance expense, Barrett Specification Roofs are moderate in first cost. And they provide a degree of fire protection not exceeded by any other kind of built-up roof.

It is only natural, therefore, that Barrett Specification Roofs are the choice of the leading architects and construction engineers the country over, and that today they cover a majority of all the permanent flat-roofed buildings in America.

The Only Bonded Roof

Barrett Specification Roofs are not merely guaranteed—they are *bonded.*

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Before specifying or closing contract for a Barrett Specification Roof, be sure to read carefully all the stipulations in the specifications.

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Barrett Specification Roofs *Bonded for 20 and 10 Years*

XUM

PERSONALS

It is announced that H. R. Shepley, architect, has opened architectural offices at 26 Pemberton Square, Boston, Mass.

A. O. Ferebeen and J. I. Cuthriell, architects, are now in their offices at 205 Bankers Trust Building, Norfolk, Va.

J. R. Abbott, architect, has opened an office for the practice of his profession at 26 Pemberton Square, Boston, Mass.

Albert S. Hecht, architect, announces the removal of his office from 155 North Clark Street to 225 East Erie Street, Chicago, Ill.

Arthur W. Angel, architect, announces that he has moved his offices to larger quarters at 325 H. W. Hellman Building, Los Angeles, Cal.

William F. McCulloch, architect, has announced that he has become associated with the firm of Godwin and Sullivant, with offices at 350 Madison Avenue, New York City.

Baches and Pfaller, architects and engineers, have moved their offices from 324-26 Merchants' and Manufacturers' Bank Building to 216 West Water Street, Milwaukee, Wis.

It is announced that H. D. Charlton and C. H. Brainard, architects, are now associated for the practice of architecture, with offices at 113 East Broadway, Glendale, Los Angeles, Cal.

Otto D. Mock, architect, has opened an office for the practice of his profession at 604 Marion E. Taylor building, Louisville, Ky., and desires to receive manufacturers' samples and catalogs.

Roy J. Kieffer, architect, has opened an office at 218 Wiltshire Building, southwest corner of Sixth Street and Western Avenue, Los Angeles, Cal. He desires a complete file of catalogs and samples of building materials.

G. L. Lockhart, architect, 1533 University Avenue, St. Paul, Minn., has opened an office at 211 M. B. A. Building, Mason City, Iowa, with George L. Frogh in charge. He desires to receive building literature and catalogs.

Philip B. Moser, architect, has moved his office from the Law Building, Norfolk, Va., and will be associated with Charles P. Breese, under the firm name of Philip B. Moser and Charles P. Breese, at 329 Dickson Building, that city.

Announcement is made of the establishment of a new firm of architects and builders, under the name of the Keller-Murray Company. This firm has been organized to design and erect buildings on a unit contract basis. Ernest J. Keller is the general manager.

Announcement is made that Montgomery and Nibecker, architects, have dissolved partnership, Mr. Montgomery retaining the office at 622 Story Building, Los Angeles, Cal. Mr. A. S. Nibecker has established an office at 421 Washington Building, that city.

Announcement is made that Croft and Boerner, Inc., architects and engineers, have incorporated to engage in surveying and building in Minneapolis, Minn., with offices at 1006 Marquette Avenue. E. B. Croft is president; G. E. Wiley, vice-president; D. M. Forfar, secretary; and F. C. Boerner, treasurer.

It is announced that Frederick W. Revels, director of the Department of Architecture at Syracuse University, is on leave for a year and is spending the time in organizing and putting into operation a Department of Architecture in the University of Porto Rico. Professor Revels will resume work at Syracuse University next year.

Thaddeus W. Parke, architect and engineer, has removed from 215 Foster Street to Suite 400-401 Fairburn Building, Merrimack Square and Bridge Street, Lowell, Mass. Mr. Parke will continue to design memorials, residences and public buildings, and will devote especial attention to mechanical and other equipment of buildings, safety engineering and design of schoolhouses. Catalogs along these lines are requested.

Mr. Rudolph P. Miller, M. Am. Soc. C. E., Superintendent of Buildings, Borough of Manhattan, New York City, resigned in January and intends taking a vacation, after which he will open an office for consulting practice. Mr. Miller served in the New York City Building Department in various capacities from 1895 to 1906 when he entered private practice. From 1910 to 1914 he served as Superintendent of Buildings and was engaged for the next two years on the revision of the building laws for the Board of Aldermen. During 1917 and 1918 he was Chairman of the Board of Standards and Appeals and in 1920 was re-appointed Superintendent of the Building Department. Mr. Miller is the author of the sections on Reinforced Concrete, and Fireproof Construction in the Kidder-Nolan Handbook for Architects and Builders.

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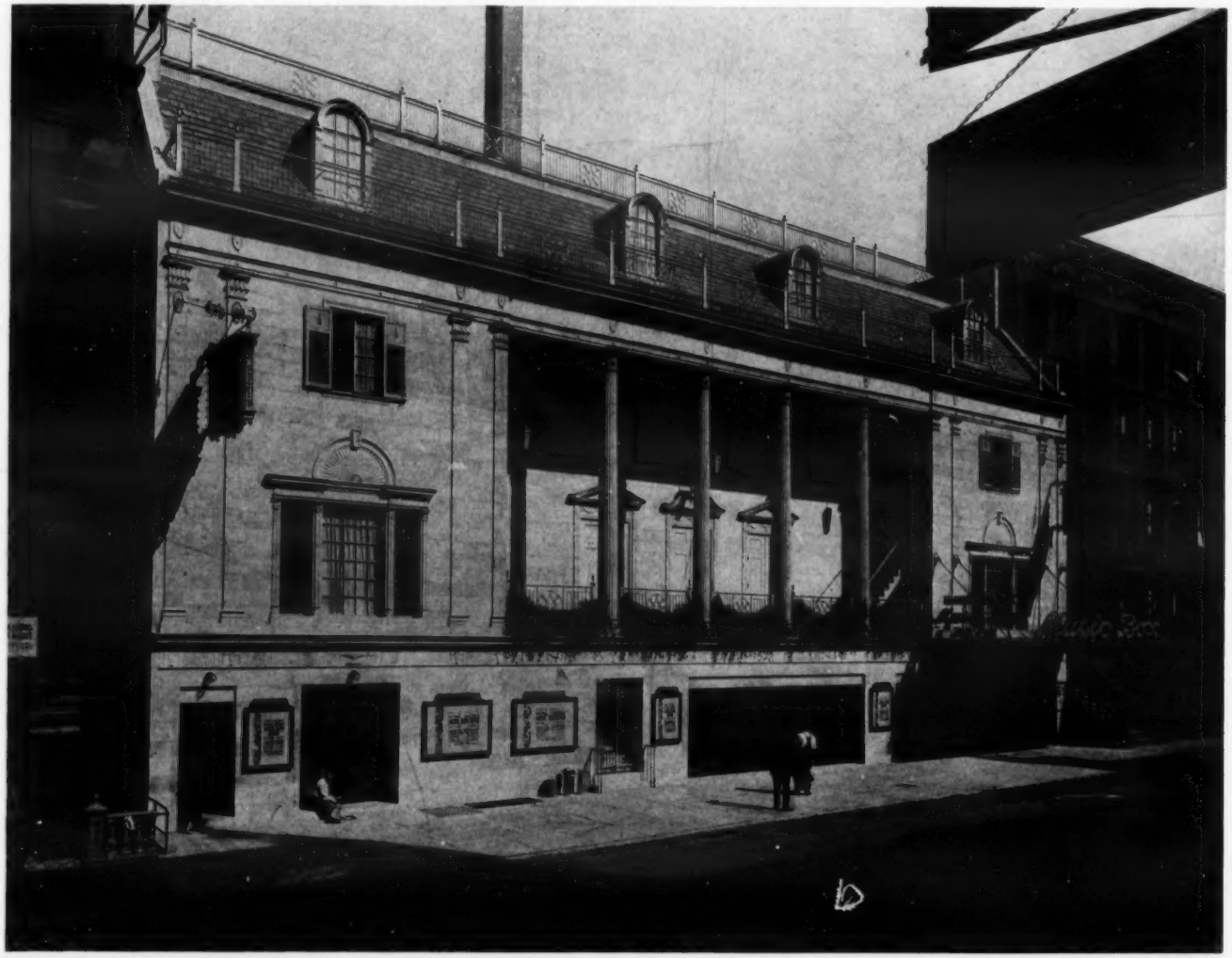
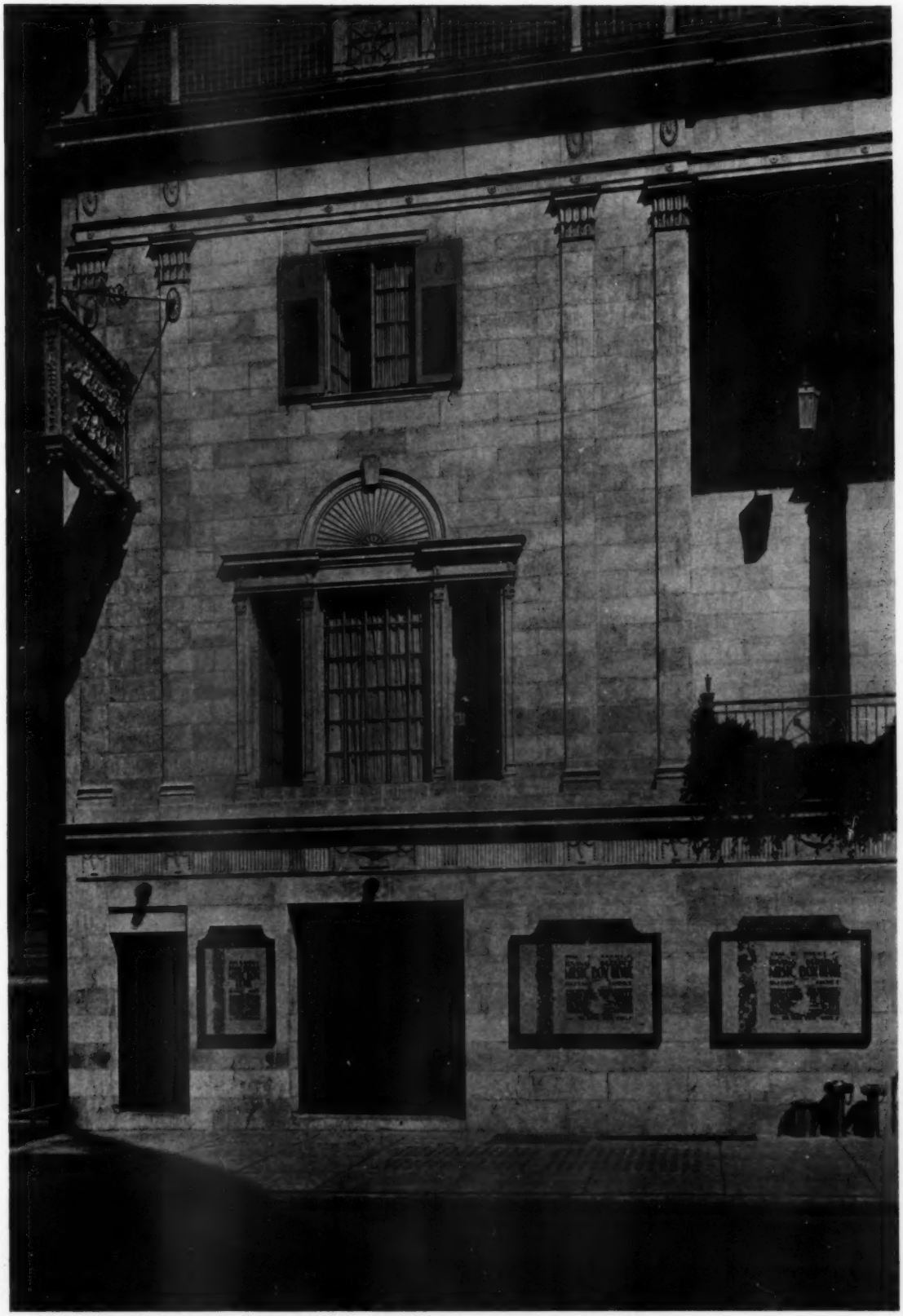


MUSIC BOX THEATRE, WEST 45TH STREET, NEW YORK

C. HOWARD CRANE, ARCHITECT



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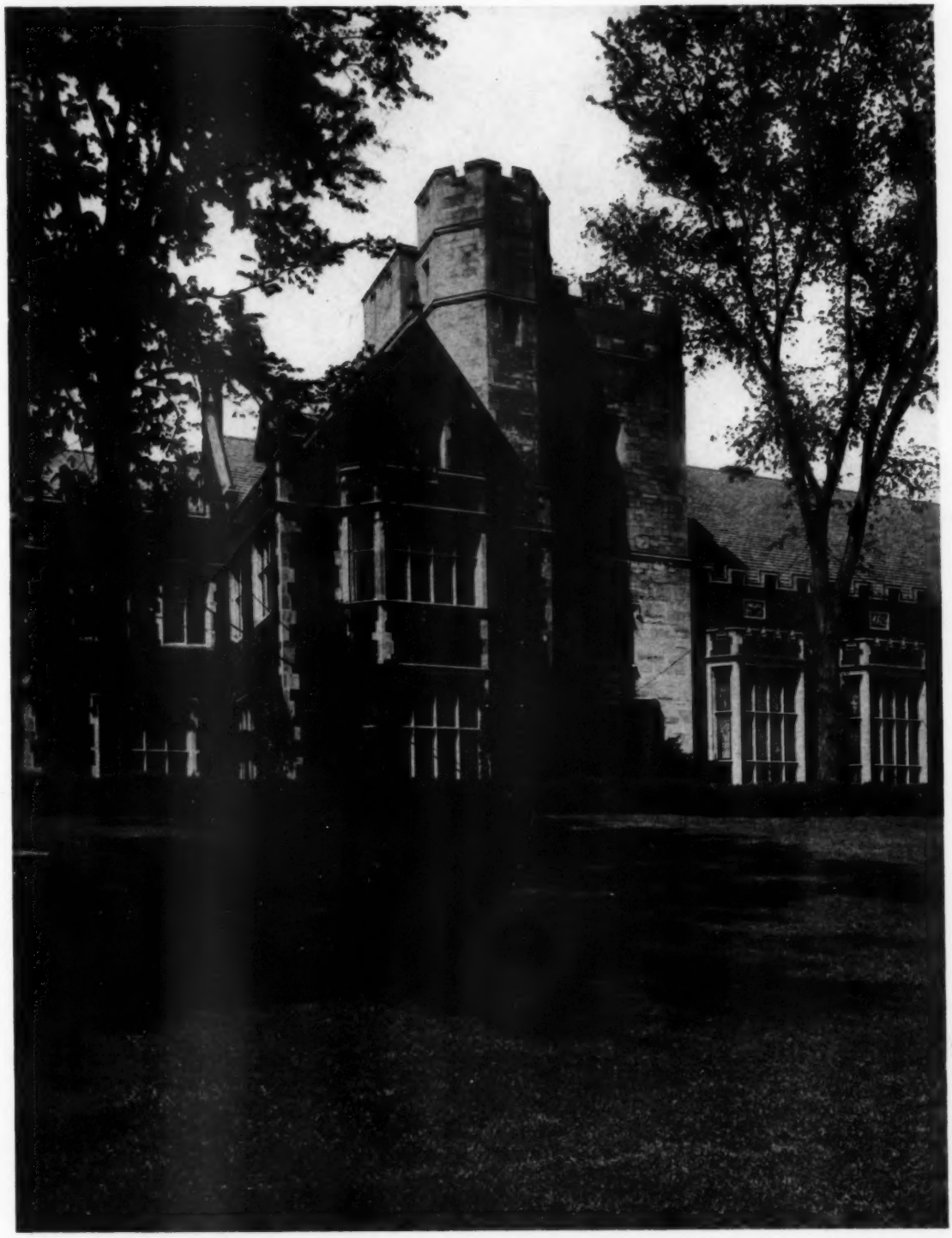
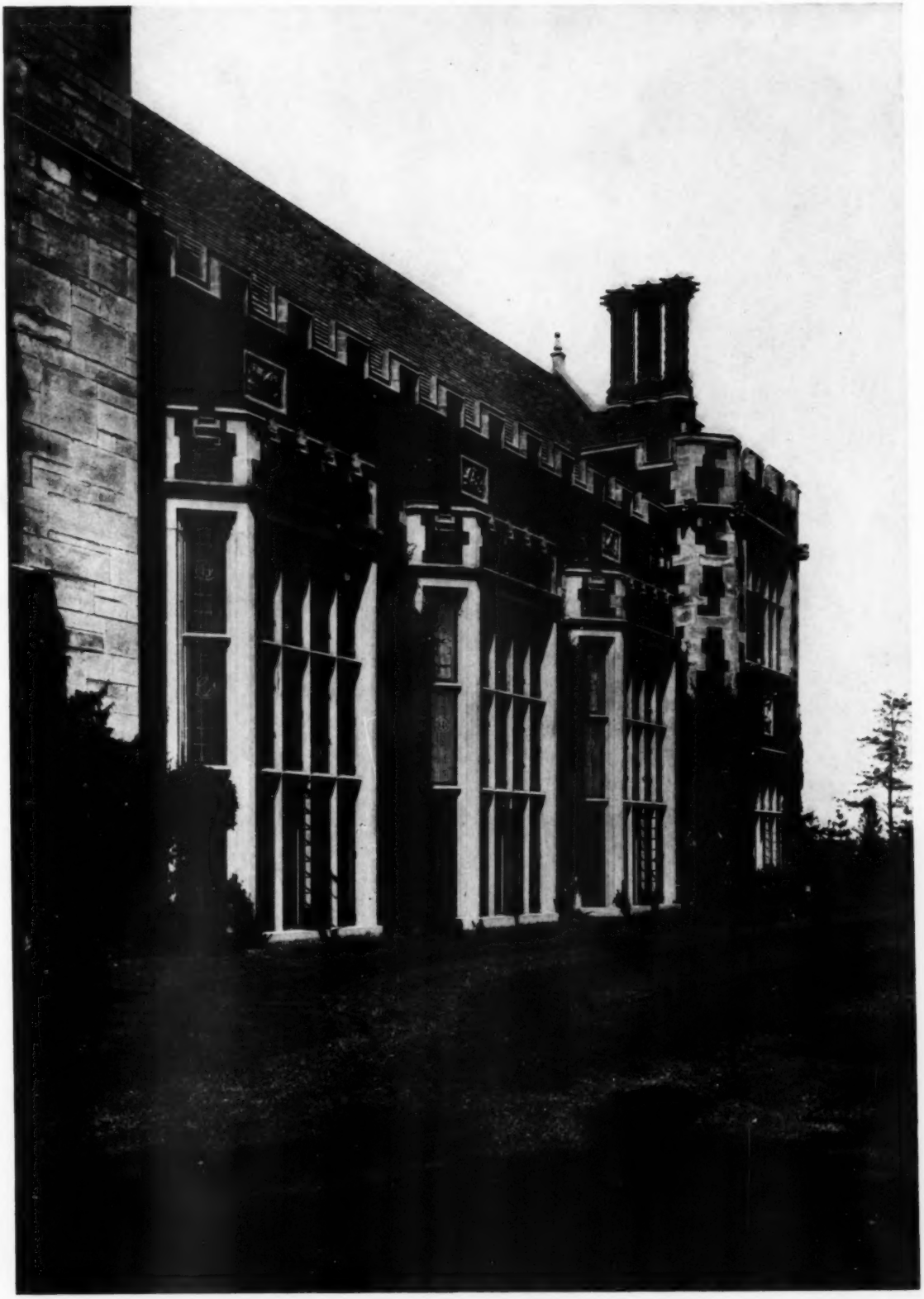


HOUSE OF NICHOLAS BRADY, ESQ., MANHASSET, L. I., N. Y.

JOHN T. WINDRIM, ARCHITECT

XUM



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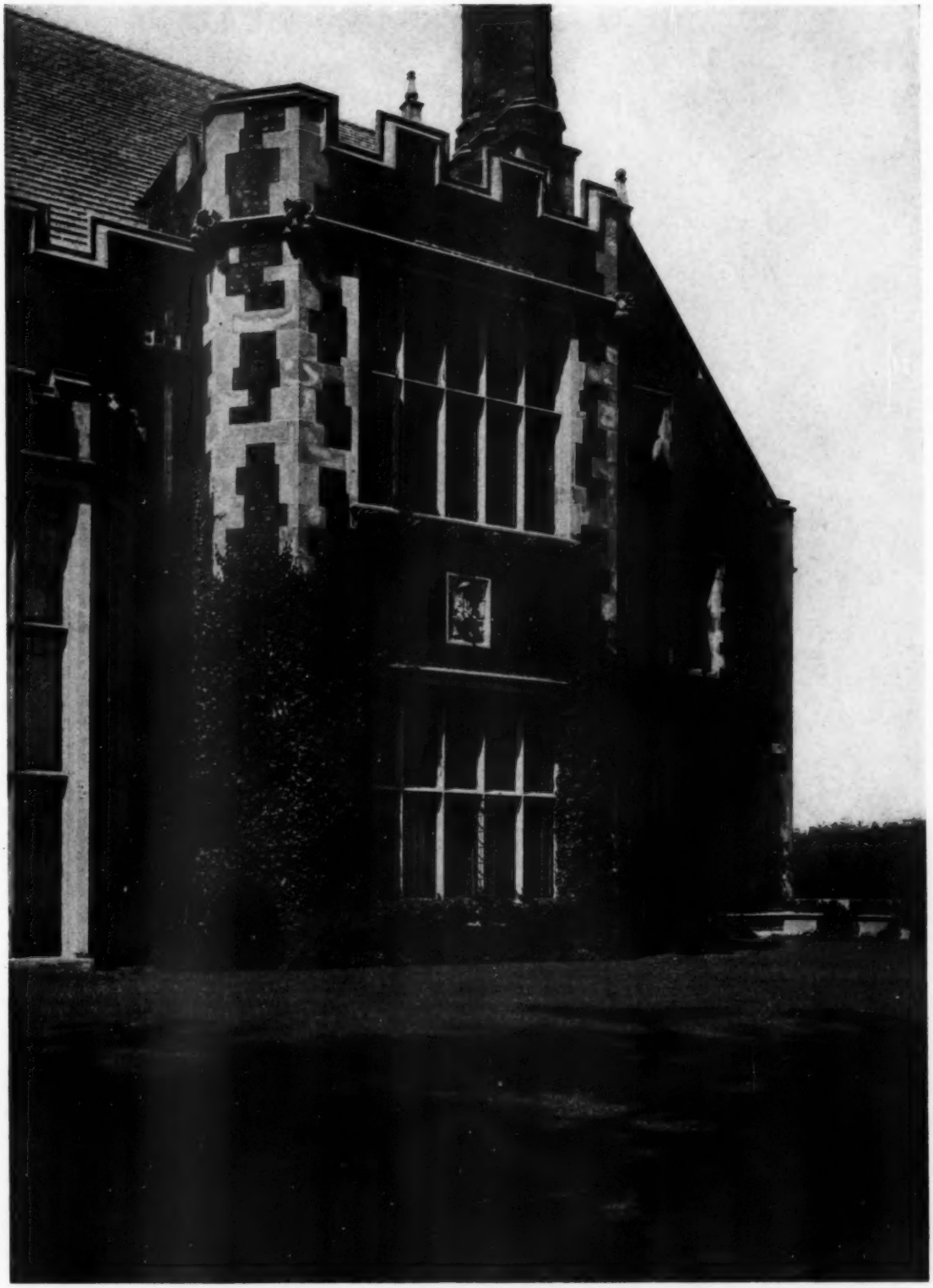

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FEBRUARY 1, 1922

HOUSE OF NICHOLAS BRADY, ESQ., MANHASSET, L. I., N. Y.

JOHN T. WINDRIM, ARCHITECT

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HOUSE OF FRANCIS KEIL, ESQ., SCARSDALE, N. Y.

A. J. THOMAS, ARCHITECT

NOTES ON ILLUSTRATIONS

The Music Box Theatre, West 45th Street, New York

C. Howard Crane, *Architect*

THE demands in New York for theatres are only second to those for hotels. The enormous transient population of New York City must be housed and must be entertained. With each new large hotel opened there follows a new theatre, until that section popularly known as the "White Light" has become a colony of houses of amusement.

The Music Box Theatre, illustrated in this issue, is one of the latest and most artistic additions to New York's large number of theatres. As will be seen by reference to the illustrations and the accompanying plans and sections, it presents some unusual features both in its architectural treatment and in the method of its planning.

Again like the hotel, the modern theatre has lost its one-time spectacular and over-decorative features, and has now become remarkable for the quiet dignity of its design and in its plan for those elements of comfort and luxurious ease that modern conditions would seem to demand.

The main façade, consisting of a loggia with well proportioned columns flanked on each side by pavilions with a Paladian motive, is built of Indiana limestone.

The main auditorium which seats 1,000, is directly entered from the lobby to a foyer or standing space in the rear of the seats. This space is separated by a draped partition, obviating the usual draughty space to be found in most theatres.

The color scheme of the auditorium is of antique ivory, glazed in soft green, and this color motive has been carried out practically in all parts of the auditorium. This harmonious color scheme has a unifying effect and in no wise savors of monotony.

To meet the wishes of the owners, first floor boxes have not been designed and it has thus been made possible to introduce a pleasing form of second floor boxes which, with their ornamental iron rails, finished in dull silver gray, lend a very decided decorative charm to the motive of the proscenium treatment.

The lighting fixtures are of Dutch brass with amber crystals.

As will be noted by reference to the plans, that part of the floor below the orchestra has been designed for the comfort of the patrons of the theatre, and arranged in a series of attractive lounges and relating spaces. The main staircase in the orchestra foyer descends on both sides to a spacious landing and is continued as one to the lounge. These lounging rooms have received the most careful consideration on the part of the architect, and in their decorative treatment are perhaps as satisfactory as any theatre of recent construction.

While the depth behind the curtain is restricted, the lack of working space has been largely overcome by the use of a well arranged counterweight system which has resulted in ease of manipulation and greatly simplifies the manual labor in the setting of the stage. The dressing rooms have received as much care in their detail, finish and lighting as that part of the theatre used by the public, and this unusual feature has made the Music Box Theatre one to receive the very enthusiastic approval of the members of the theatrical profession who are engaged in work there.

House of James Roy Allen, Architect, Chicago, Ill.

A FEATURE of the exterior of this house is its construction of common brick stained white, with a course of thin tile projecting about three-quarters of an inch beyond the face of the wall every third course of brick. The effect obtained is an unusually pleasing one and is accented by the roof of red Spanish tile.

The plan of the interior is one of exceptional excellence in a small house, and affords a maximum of good living conditions, with convenience of arrangement and a certain homelike character that is of unusual attractiveness.

The entrance loggia is of white plaster with a black and white tile floor. The walls of the living room, from floor to ceiling, are of walnut paneling and the living room has an arched plaster ceiling. The floor is laid in black and white tile eight inches square. The fireplace is of cast cement.

In a letter received from the architect, he states that the idea in planning the house was to have a complete, unusual house without waste space and built in such a manner as to be above the average small house. It would seem that the effect has been admirably achieved.

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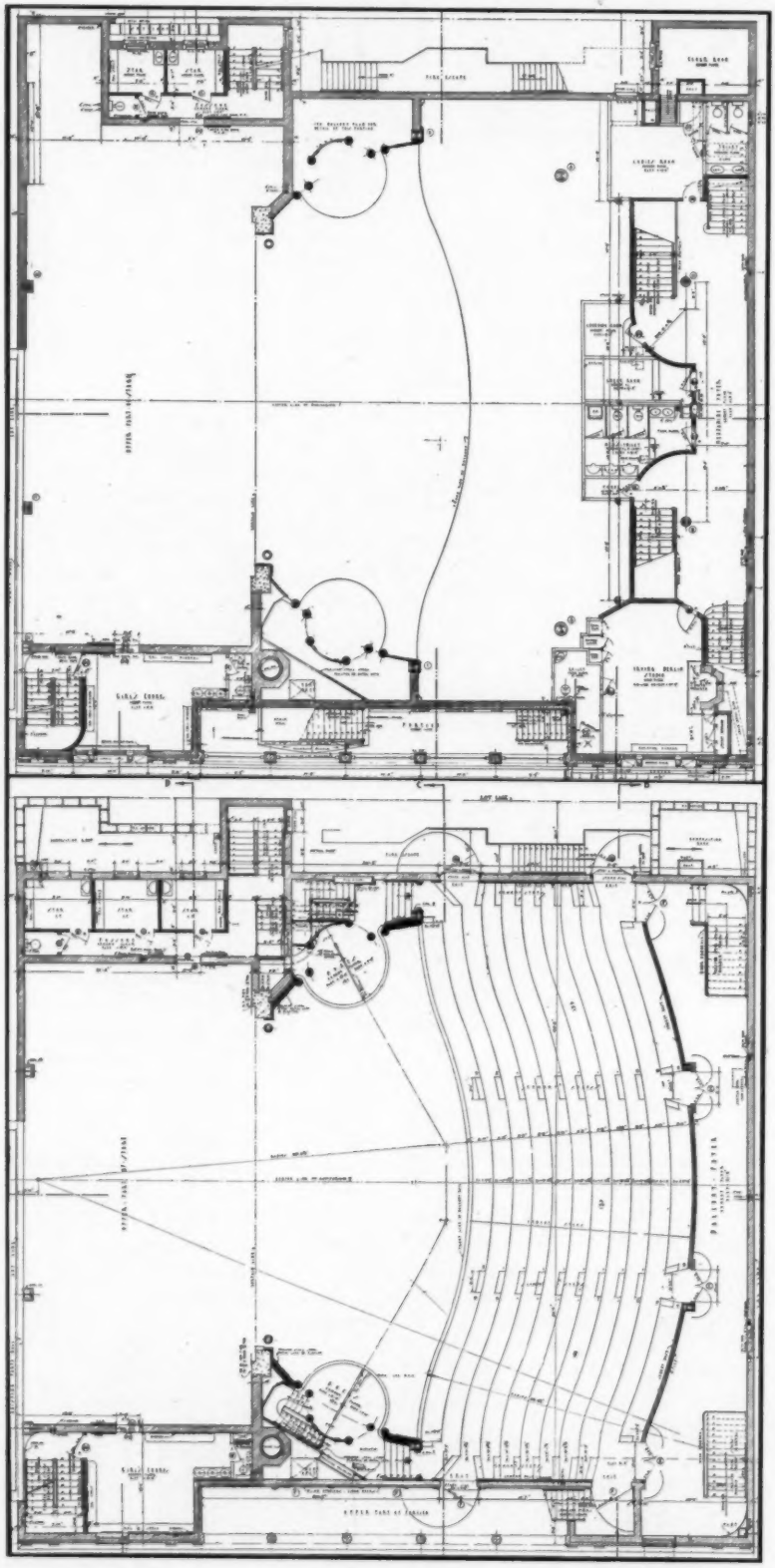
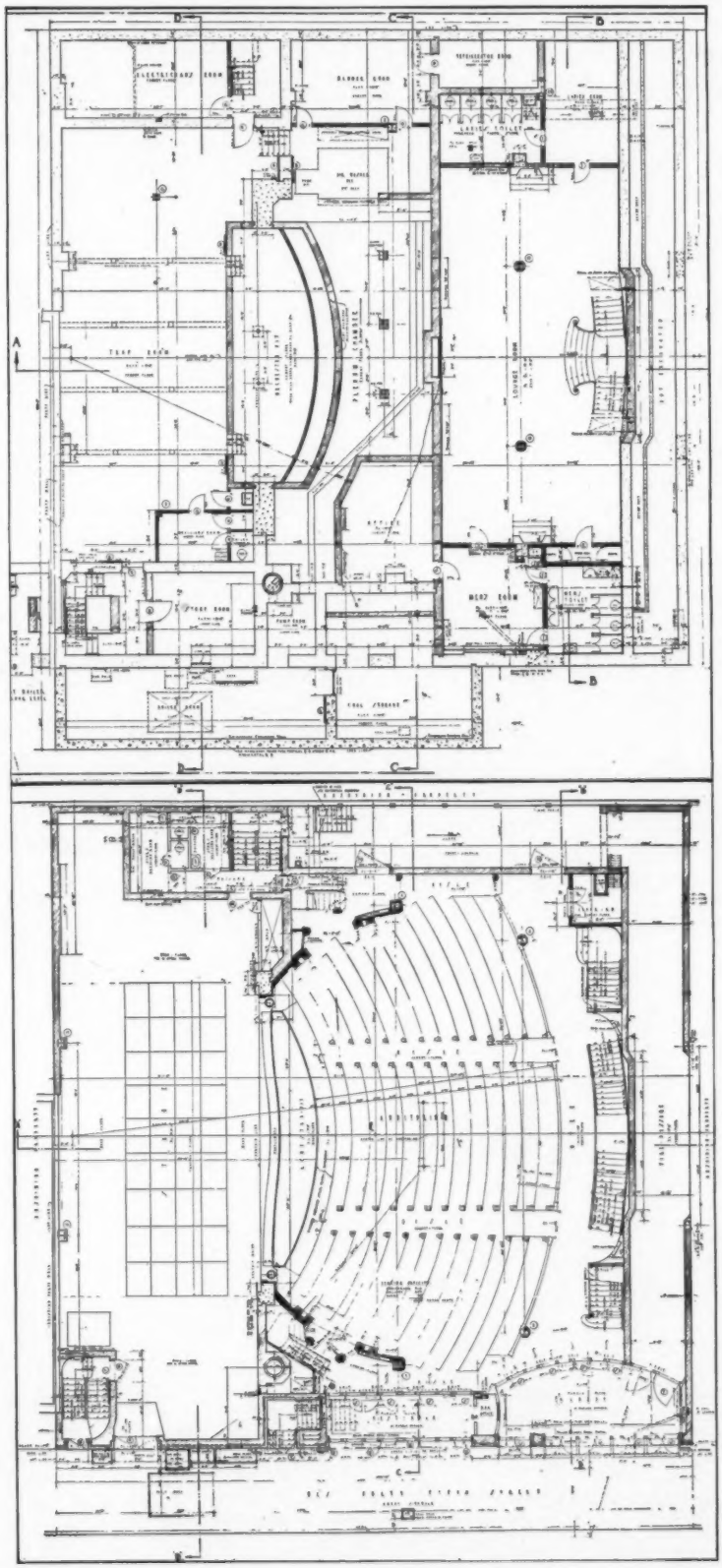


MEZZANINE PLAN

BALCONY PLAN

MUSIC BOX THEATRE, WEST 45TH STREET, NEW YORK

C. HOWARD CRANE, ARCHITECT



BASEMENT

AUDITORIUM

MUSIC BOX THEATRE, WEST 45TH STREET, NEW YORK

C. HOWARD CRANE, ARCHITECT

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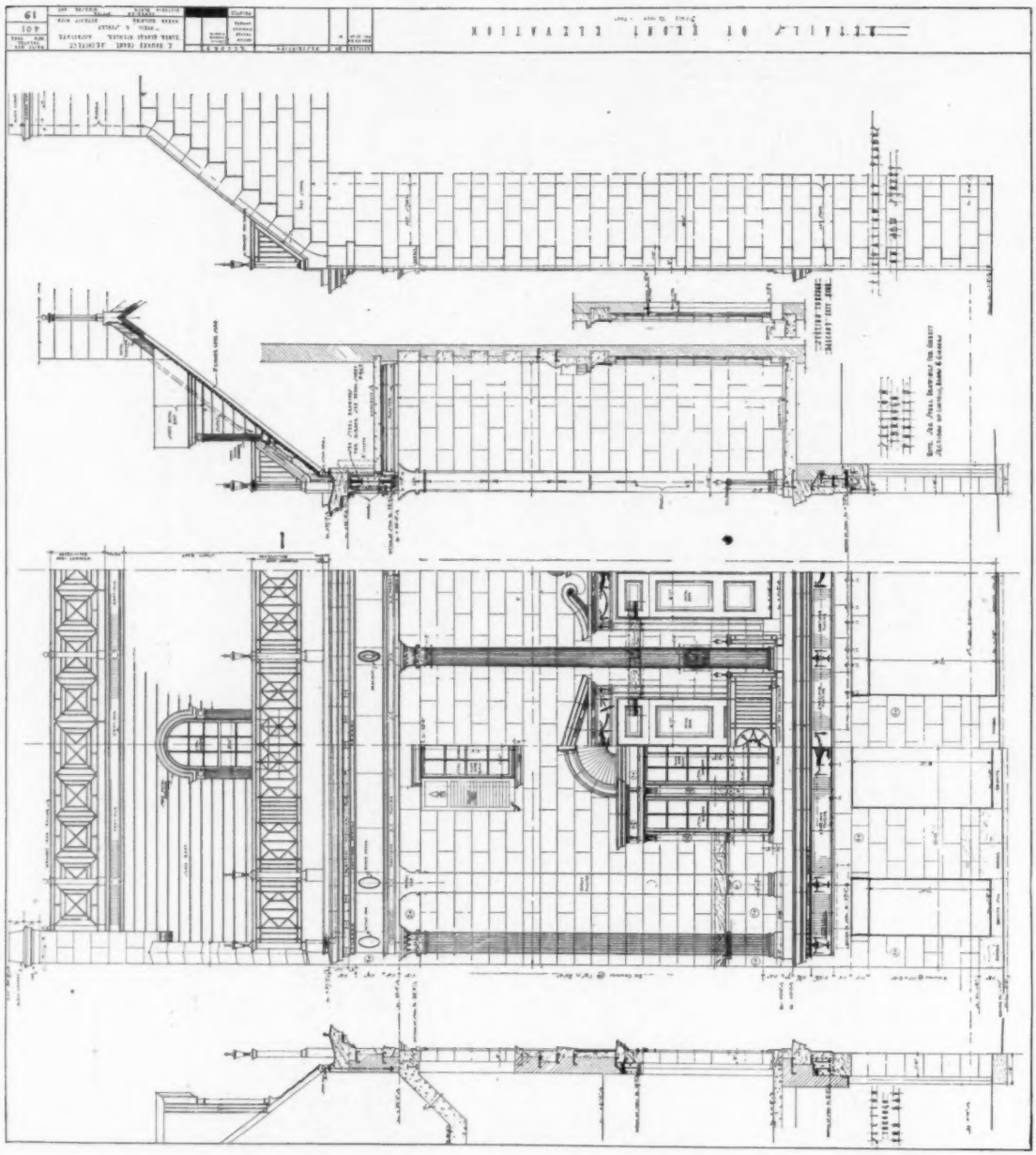

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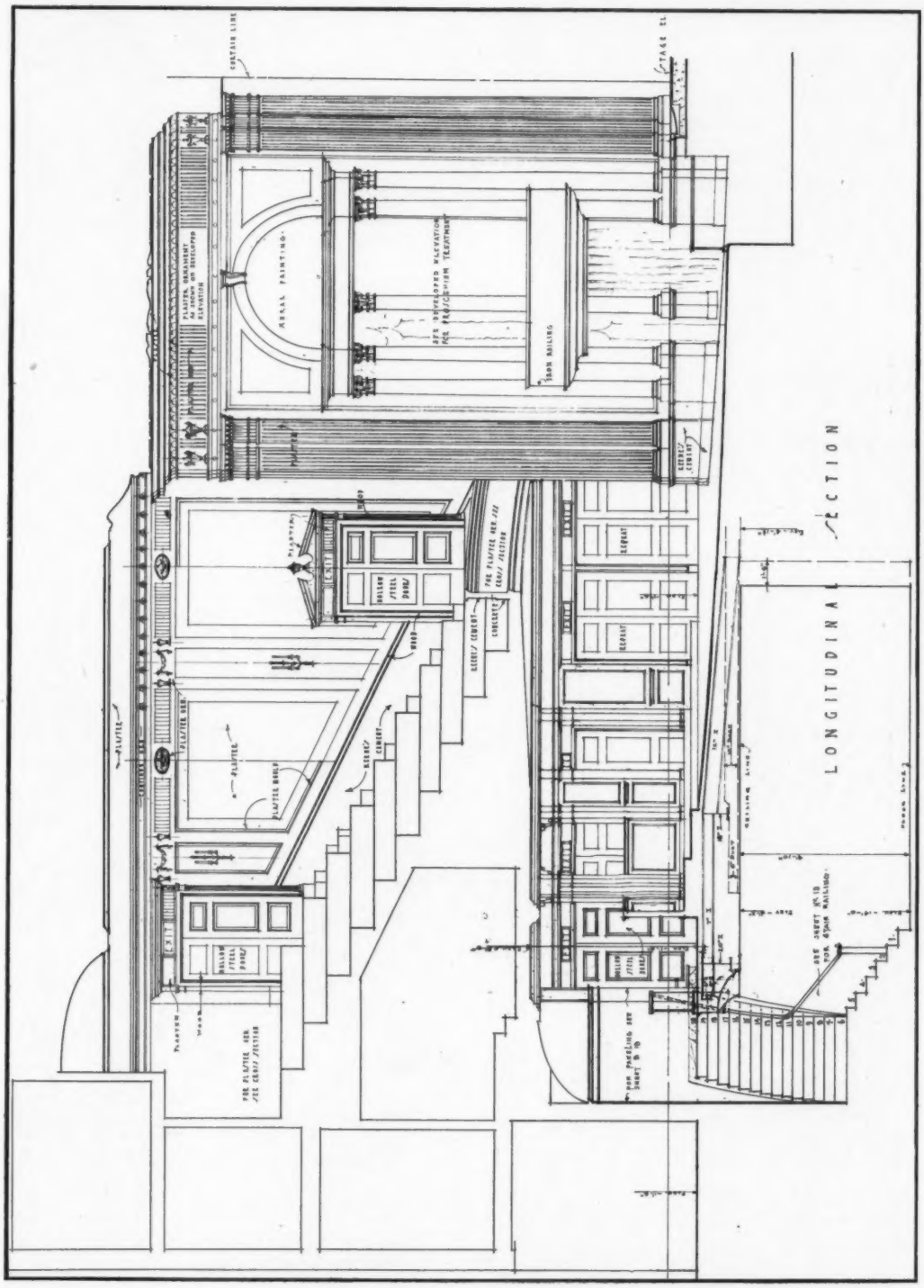

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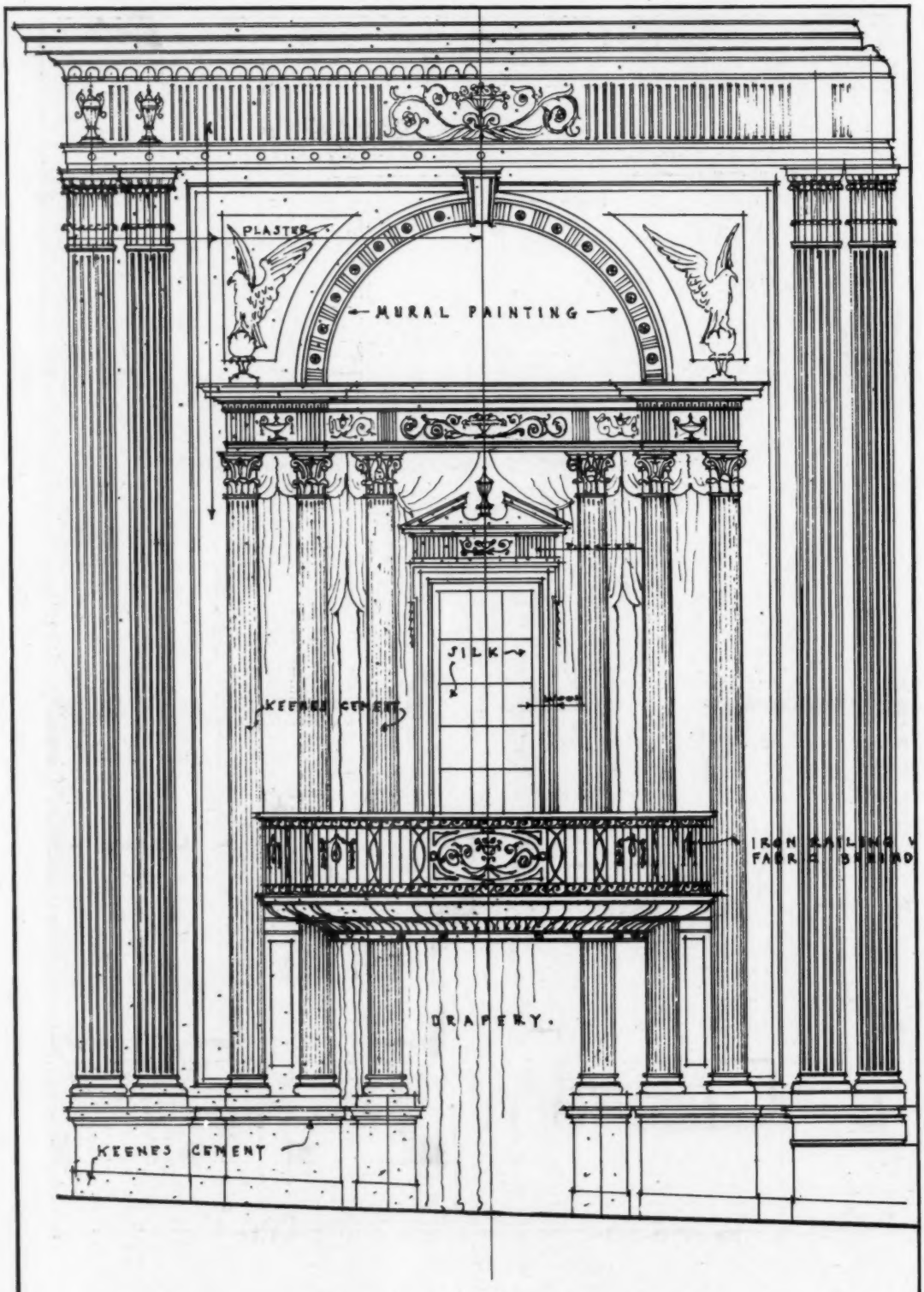
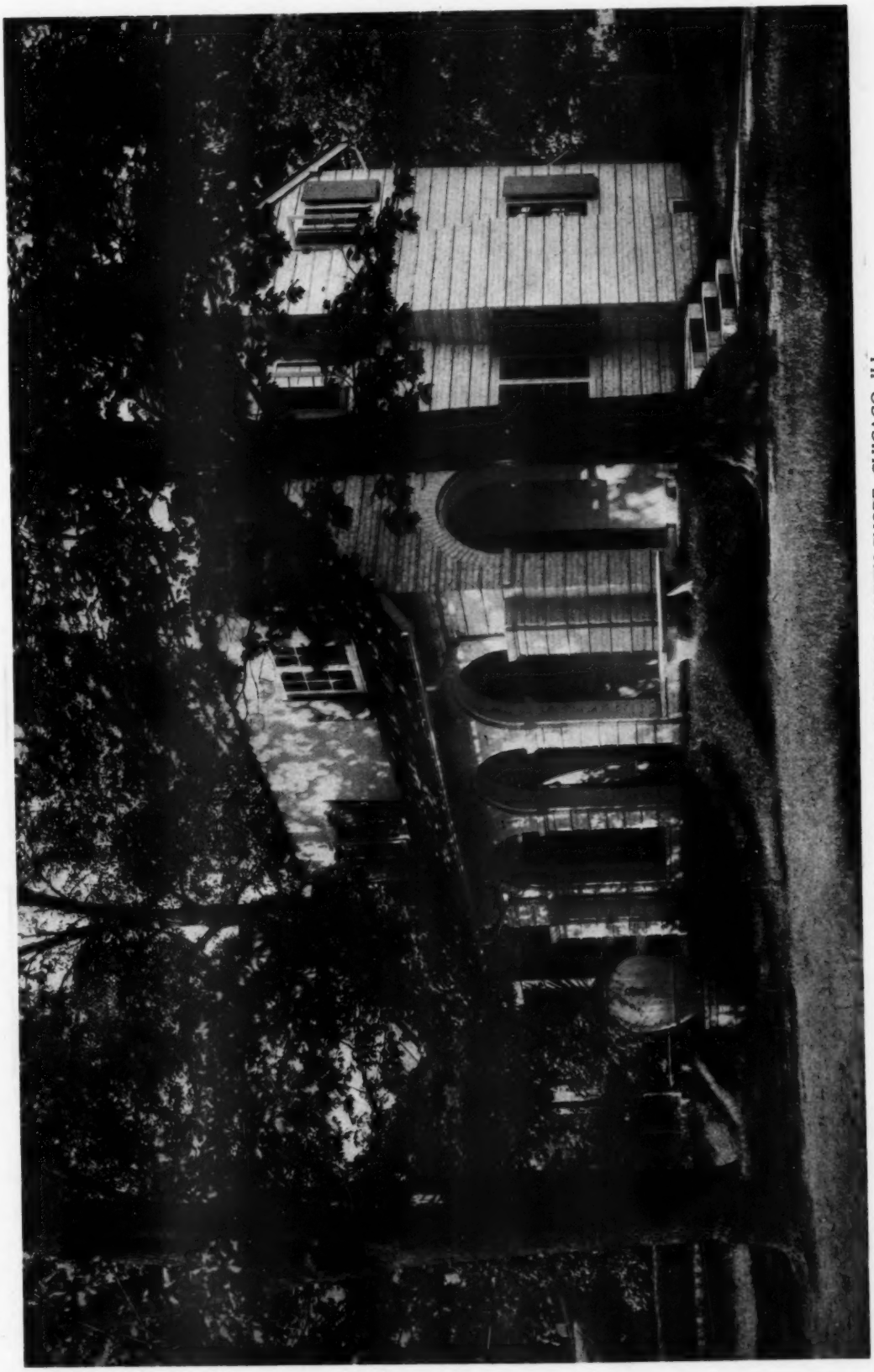


ELEVATION OF
PROSCENIUM TREATMENT

MUSIC BOX THEATRE, WEST 45TH STREET, NEW YORK
C. HOWARD CRANE, ARCHITECT



HOUSE OF JAMES ROY ALLEN, ARCHITECT, NORTH SHORE, CHICAGO, ILL.

XUM

HOUSE OF JAMES ROY ALLEN, ARCHITECT, NORTH SHORE, CHICAGO, ILL.

LEGAL DEPARTMENT

Conducted by

CLINTON H. BLAKE, Jr., of the New York Bar

READERS of THE AMERICAN ARCHITECT may remember references which I have made elsewhere to the broadening in recent years of the scope of the New York law on mechanics' liens. As the law originally stood, the architect, in order legally to maintain and enforce his lien, was compelled to show that he had actually supervised the work done. It was not formerly sufficient that the architect prepare the plans and specifications and that the building be erected in accordance with them. It is manifest that this former rule was not in accord with the spirit of the lien law. The intent of lien legislation was to grant a lien for work which entered into and improved real property. Of course, plans and specifications, used in the erection of a building on real property, very directly entered into this improvement. To say that because superintendence was lacking, a lien could not be had, and, for the legislature to enact a law which would not allow a lien to be based on plans and specifications unless accompanied by actual superintendence, was neither logical nor fair to architects. It was this fact probably, that led the New York legislature to amend the lien law and to change the wording of the law so as to make possible a claim by an architect for a lien on the basis of the preparation of plans and specifications and their use in the building operation, irrespective of whether he superintended the work or not.

I WAS called up recently by another lawyer, who was interested in a case where an attempt was being made to induce the court to accept a still more liberal interpretation of the New York Lien Law and to allow an architect to enforce a lien where he had prepared plans and specifications, but where the building operation had not been proceeded with. I advised the attorney who consulted me that while the case was apparently one without exact precedent in this state, it seemed entirely clear that the architect could not maintain a lien under such circumstances. As I have noted above, the theory on which a lien is based is that the work done enters into the improvement of the property. Manifestly, unless the building for which the plans are prepared is erected, the property is not improved. No amount of work done by the architect in preparing the plans and specifications will alter this fact or enhance the property, as property, a single dollar, unless the plans and specifications are actually utilized in the erection of a building upon the property.

MECHANICS' liens were not known at common law, and are purely the result of statute. The legislature might, if it desired, so word the statute that an architect preparing plans and specifications for a particular piece of property, should be entitled to a lien, even though no building were erected on the property. Such a law would, however, be at variance with the theory and practice of lien legislation as it has been developed abroad and in this country. In any event, neither the New York Statute, nor so far as I know, any other lien statute has ever gone to this length. The case to which I have referred came on for trial shortly after I was asked about it, and the trial judge dismissed the case and held, as it had seemed he must, that no lien could be enforced in New York under such circumstances.

Of course, the fact that a lien will not be granted does not mean that the architect cannot collect for the work done on the plans and specifications in such a case. If his agreement with his client is in proper form, or if he has no agreement and has not otherwise committed himself, he is entitled to collect the agreed or reasonable value of the services rendered, entirely irrespective of his right to enforce a lien for this amount. The two rights—the right to receive pay for his services; and the right to file a lien for the amount due therefor—are entirely separate and distinct, but it may very well be that he can collect the amount due him by suit and yet not be able to sustain a lien based on the same services for which the collection is made. If he can enforce a lien he can, on the same facts, succeed in an ordinary direct suit for the amount due.

The architect must not forget, also, that the lien laws of the different states vary greatly and that each is construed according to its particular phraseology. Many are not as liberal as the present New York law. Many are more liberal in some respects and more limited in others. If lien protection is sought the architect must, accordingly, be sure of his ground and not proceed without proper advice and guidance. It is a rather safe general rule, however, that, where the enforcement of a lien is sought, the more progress that is made on the building operation and the more superintendence that is given by the architect, the better will be the latter's chances as a lienor.

LEGAL DECISIONS

THE general contractor sued a sub-contractor to recover an alleged overpayment. The sub-contractor defended the suit on the ground that there was in fact a balance due him from the contractor, but he did not set up any formal counter-claim or demand any affirmative judgment against the contractor for the balance due. The verdict was in favor of the sub-contractor, dismissing the contractor's claim. Later, the sub-contractor took lien proceedings against the property and the owner. The owner claimed that the sub-contractor was stopped from taking this action, because he had set up the balance due from the contractor in the suit between the contractor and himself. The Court held that the sub-contractor was not so stopped; that he had the right to prove as he did in the suit by the contractor merely that there was nothing due from him to the contractor, without asking for the judgment in his favor against the contractor; that the first suit was simply a personal matter between the contractor and the sub-contractor, while the second was a proceeding to enforce a lien against the land; that the two actions were not identical in subject matter, and the first action was therefore no bar to the recovery of the sub-contractor under his lien rights.

Ott v. Duplan Silk Corporation (*Pennsylvania*), 114 Atlantic 630.

THE sub-contractor sued the general contractor for a balance which he alleged to be due. The contract which the general contractor had taken amounted to $800,000. The general contractor had paid to the sub-contractor a large sum of money and insisted that this was all that was due. The plaintiff, the sub-contractor, within a few hours thereafter, stopped all work and abandoned his contract, claiming that the amount paid was not the full amount due. The defendant, the general contractor, notified the plaintiff that he was prepared to pay at once any sum shown to be properly due. This was within six days from the time that the sub-contractor quit. The sub-contractor refused to submit any details of his demand or any statement for verification by the contractor. It was held that if the general contractor substantially complied with the contract with the sub-contractor and paid in good faith the sum which he believed to be due, the sub-contractor was not justified under the facts in the case in abandoning the job, notwithstanding the general rule would be that where a job is spread over a period of considerable time and when the payments to the sub-contractor are based on the amount of work performed, the covenant to perform is dependent upon the covenant to pay and a refusal to pay amounts due might justify a recission of the contract; that the question whether in this case the offer of the general contractor to pay, upon proper proof of the balance alleged to be due, was reasonable was properly left to the jury; that the right of a sub-contractor in such circumstances to rescind will be upheld only where the general contractor is given a reasonable time within which to comply with demands for payment, and that the abandoning of the work in the present case by the sub-contractor was not justifiable.

Turner etc. Co. v. Chester etc. Co. (*Pennsylvania*) 114 *Atlantic* 780.

THE defendant purchased a lot in the City of Newark. His deed provided that he should be restricted to the erection of a two-family house, which should look like a one-family house. There existed a community scheme of development in the area in which his lot was situated, which restricted the houses to be erected in that area to one-family houses. He had no actual notice of this scheme beyond the statement in his deed. The deeds to the other owners in the same area, however, all contained restrictions limiting the building of houses to one-family houses. All of the houses within the restricted area were one-family houses of a general uniformity of construction. The houses on the plot just north of the restricted area and adjoining which and on the south of which defendant's lot was located were all two-family houses. The defendant inquired of the grantor who sold him the lot and the City authorities, who said he might erect a two-family house. As he was proceeding with the erection of a two-family house, the plaintiff brought an injunction to restrain him from so doing. The Court held that it was the defendant's duty, upon observing the uniform character of the houses in the neighborhood and their difference from those immediately north, to inform himself as to the reason why the houses in the area were all one-family houses, by inquiring in the immediate vicinity, especially in view of the fact that his own deed gave him notice that there were some restrictions. It was further held that covenants such as those in this case restricting the houses to be erected in a given area to one-family houses constituted a general neighborhood or community scheme, and that the regulations covering this scheme must be observed by a lot owner, if he had notice thereof at the time he purchased his lot, or, if, as in this case, he was put on his guard and reasonable inquiry would have given him the requisite knowledge.

Shoyer v. Mermelstein, (*New Jersey*), 114 *Atlantic* 788.

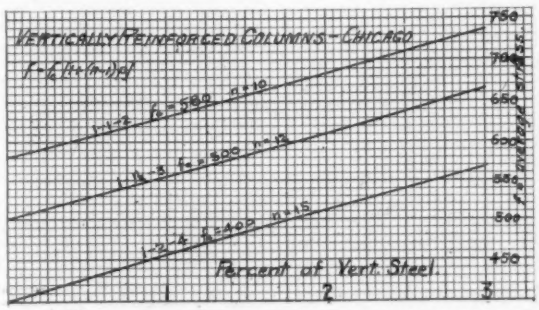
DEPARTMENT OF ARCHITECTURAL ENGINEERING

DESIGNING REINFORCED CONCRETE COLUMNS

A few essential principles governing the use of concrete and steel in combination

A VERTICAL steel rod embedded in concrete forms a column in which the two materials act together until the stress becomes great enough to strip the concrete from the steel. Tests to destruction of reinforced concrete columns prove the foregoing statement to be true, within limits.

Take a piece of steel of unit area and a piece of concrete of the same area and load them equally. The concrete will shorten to a much greater degree than the steel and the difference in a unit length will be the "ratio of deformation" between the two materials. For a concrete composed of one part of Portland cement, two parts of fine aggregate and four parts of coarse aggregate the ratio of deformation is usually taken as equal to 15. This is but another way of saying the concrete will be reduced in length 15 times more than the steel, assuming each to be of the same area and the load on each to be equal and centrally applied.



A straight-line diagram for designing ordinary reinforced concrete columns

Let f = the average fiber stress per unit of area of the horizontal section of a column

f_c = the safe unit stress on the concrete alone

n = the ratio of deformation

A_c = the cross sectional area of the concrete alone

A_s = the cross sectional area of the steel

A = the total area $= A_c + A_s$ then

$P = fA$ = total load on the column, and

$$f = f_c (A_c + nA_s) \qquad (1)$$

The safe concrete stress is the governing factor and the steel may be stressed n times the concrete stress, but no more. Steel may be used with a very high stress in a structural steel column but when used in combination with concrete the stress is kept low. For example the unit stress in a structural steel column may be as high as 14000 lb. per sq. in. but if the same steel is used with a concrete in which the safe stress is limited to 400 lb. per sq. in., the steel stress cannot exceed 15 x 400 = 6000 lb. per sq. in. If a higher stress is used the concrete will be stressed more than n times the safe stress and will be stripped from the steel. When this occurs the two materials will begin to act separately.

Considering the matter from another angle we may say that the total area is increased by $n - 1$ times the area of the steel. This means that since the steel occupies a definite area then n times the steel area gives too great an increase, so the difference is made by subtracting *1* from n. This permits us to express the relation in ratios of area.

Let p = ratio of steel area to total area, then

$$P = f_c A [1 + (n-1)p] \qquad (2)$$

The diagram here presented was prepared for the design of longitudinally reinforced concrete columns in Chicago. There the safe compressive fiber stress on 1-2-4 concrete in this type of column is 400 lb. per sq. in. and $n = 15$; on 1 - 1 1/2 - 3 concrete the stress may be 500 lb. per sq. in. with $n = 12$; for 1 - 1 - 2 concrete the stress may be 580 lb. per sq. in. with $n = 10$.

The total cross-sectional area of the reinforcing

steel cannot be less than one-half of one per cent nor less than one square inch and no rod or bar can be used having a diameter or thickness of less than one-half inch. The maximum amount of vertical steel is limited to three per cent. Horizontal ties to prevent lateral outward flexure of the steel must be used at intervals not greater than twelve times the least diameter or thickness of the vertical steel reinforcement and not exceeding 18 inches.

The preparation of such a diagram is simple for the formula is of the straight line type. In formula (2) let $P = f$ and $A = 1$. The expression then appears as follows;

$$f = f_c [1 + (n-1)\, p] \qquad (3)$$

For the 400 lb. concrete $n - 1 = 14$; for the 500 lb. concrete $n - 1 = 11$ and for the 600 lb. concrete $n - 1 = 9$.

Draw the vertical lines representing the steel ratio and the horizontal lines representing the average stress. From zero reinforcement draw the diagonal lines representing the stress in the concrete. Plot the average stress on the three per cent vertical line and obtain the following values; 400 lb. concrete = 400 x 1.42 = 568 lb.; 500 lb. concrete = 500 x 1.33 = 665 lb. and for the 580 lb. concrete, 580 x 1.27 = 736.6 lb.

The cross-section of the column cannot be less than 64 inches and the ratio of length to the least side or diameter cannot exceed twelve. Usually this may be interpreted to mean the external dimensions of the column, in which case the concrete used for fire protection cannot be counted upon for strength. If the column is supposed to be fireproof there must be a covering of not less than two inches over the steel. To dimension the column assume a diameter, or least dimension, equal to one-twelfth the clear height. From this deduct four inches and the remainder will be the actual column size which cannot be less than 8 in. Divide the total load to be carried by the area of the column and obtain the stress per square inch. On the diagram find this stress and follow it horizontally to a sloping line indicating the concrete stress. The intersection of the horizontal and a sloping line determines the amount of vertical reinforcement to be used. When the average stress is high enough to intersect two sloping lines a choice may be made of either concrete. It is then a question of using a rich concrete with a small amount of steel or a leaner concrete with more steel.

For hooped columns, which are columns having spiral steel around vertical steel, the 1-2-4 concrete may be stressed to 500 lb. per sq. in.; the 1 – 1 1/2 – 3 concrete to 600 lb. per sq. in. and the 1 – 1 – 2 concrete to 725 lb. per sq. in. The hooping steel is expressed in terms of vertical steel and is assumed to be 2.5 times as effective in the form of hooping as it would be if used in the form of vertical steel.

Let p' = vertical equivalent of spiral steel, then

$$f = f_c [1 + 2.5np'] [1 - p' + (n-1)p] \qquad (4)$$

The diagrams for hooped columns were constructed by means of formula (4) as described for the first diagram. In spirally reinforced, or hooped columns, the vertical reinforcement cannot be less than the spiral reinforcement, nor greater than eight per cent of the area within the vertical steel. The percentage of spiral hooping cannot be less than one-half of one per cent nor greater than one and one-half per cent. The spiral hooping must have a uniform pitch not greater than one-tenth of the diameter of the column and not greater than three inches. The spiral must be attached to each vertical at every intersection in such a manner as to maintain the form and position of the steel. There must be not less than eight verticals and the distance between verticals, measured on the circumference of the hooping cannot exceed nine inches.

The diameter of a round column and the dimensions of a rectangular, or octagonal column, must be measured to the outer face of the steel. No concrete outside of the steel is to be considered as a part of the effective column section. The concrete outside the steel does actually carry a large part of the load until a fire damages it. It must however be considered as fireproofing only.

In some building ordinances the ratio of length to least diameter may be 15, instead of 12 as in Chicago, and this ratio is recommended in the Joint Committee Report. The ratio required in Chicago is too conservative if used for the effective column size. When the ratio of 15 is used it is usually assumed to apply to the effective area within the steel.

In the city of Los Angeles reinforced concrete columns may be used with an unsupported length equal to 30 times the least dimension or diameter of the effective section.

Let f_c = concrete fiber stress for column with diameter 1/15 the unsupported length

and rf_c = concrete stress for a column with diameter less than 1/15 the unsupported length

$$r = 1.6 - 1/25 \left(\frac{l}{d}\right) \qquad (5)$$

in which l = the unsupported length

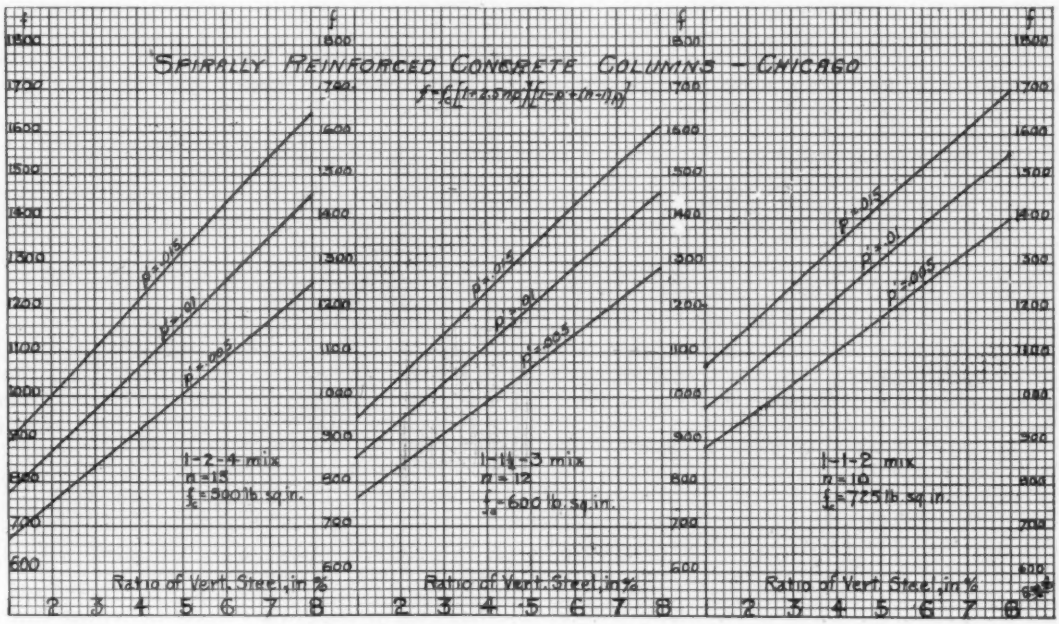
d = diameter or least dimension.

Some years ago a number of buildings were designed in which the reinforcement for the columns was in structural shapes, instead of being in rods or bars. The steel was designed to carry the dead load and the concrete when added was assumed to carry part of the live load. The assumptions were not correct, for concrete and steel

do not act well together when the steel is in large sections. The surfaces are too large for the concrete to adhere properly. In the hope that the two materials might act together properly the specifications provided that all the dead load should be in place before pouring the concrete. For a time designers took favorably to this idea but it was discovered in a number of cases that the loads placed on the framework of a building during construction often exceeded those for which the framing was designed. This being the case the reinforcement if in the form of structural shapes had really to be designed for the full dead and live loads, thus again reducing the role of the concrete to that of mere fireproofing.

When the vertical reinforcement in a reinforced concrete column consists of a structural steel column of box shape, with lattice or batten plates of such a form as to permit its being filled with concrete, the concrete may be stressed as high as concrete in hooped columns, provided that no shape of less than one square inch section be used and that the spacing of the lacing or battens be not greater than the least width of the columns. This provision takes care of types of reinforced concrete in which the steel is designed to carry all the dead load and the concrete assists in carrying the live load.

The New York Building Code contains a provision permitting the use of a fiber stress of 16000



A straight-line diagram for designing hooped columns

The fad lasted long enough however to result in many cities providing for this form of construction in their building laws. In Chicago the effect of stiffening a steel column by filling it with concrete is recognized, but such a column is not called a reinforced concrete column. When a steel column is designed to carry the entire live and dead load the allowable stress is determined by the following formula,

$$18000 - 70\frac{l}{r} \qquad (6)$$

with a maximum stress of 16000 lb. per sq. in. provided the column is filled with concrete and is protected by concrete which extends three inches beyond the face of the steel. When this outer covering of concrete is omitted the above formula is used but the allowable stress shall not exceed 14000 lb. per sq. in.

lbs. on structural steel shapes provided additional reinforcement is added in the form of vertical bars and bands, in quantity amounting to one per cent of the total area of the enclosed concrete. The reinforcement to be divided half in vertical bars and half in bands.

The principle underlying this idea is that experiments show the concrete is strengthened when held in place by bands or hooping. For example, in Chicago the safe unit stress in concrete reinforced with vertical steel is one-fifth the ultimate strength but when hooping is used the safe unit stress may be one-fourth the ultimate and the steel used as hooping is considered to be two-and-one-half times as effective as the steel placed vertically. The New York Code therefore assumes that when the concrete is enclosed within bands and reinforced also with vertical steel that

the strength thus increased may be added to the strength of the structural steel. This provision is typical of the kind that were introduced into building ordinances when men had a poorer understanding of the basic principles of reinforced concrete than they have today. At the time there were men who knew better but they did not exercise enough influence in the preparation of building ordinances.

To show how this might work out in case a designer cared to press the point, take two columns to carry the same load, one being an 8-in. H column and the other a 6-in. H column, the cross sectional area of the columns being equal. The first column having a larger radius of gyration is naturally the better column. When used as permitted in the code, the amount of reinforcing steel being based on the area of the concrete within the bands, the 8-in. column being larger and surrounded by a greater area of concrete must be more heavily reinforced than the 6-in. column. The *reductio ad absurdum* method of demonstration in this instance would work out better were a 4-in. H used instead of a 6-in.

The use of the diagrams was illustrated by assuming the columns to be limited in size by the ratio of length to diameter or least dimension. In the lower floors of high, or heavily loaded buildings the column size can only be limited by using a strong concrete and considerable steel. Even then it happens that the sizes are objectionable and in many buildings structural steel columns are used in the lower stories and reinforced concrete columns in the upper stories. Using the formula permitted in Chicago the structural steel columns may be filled with concrete and higher stresses be used than are permitted with columns not stiffened in this manner. Such columns are not however reinforced concrete columns but are merely stiffened steel columns. The reduction in size is generally quite satisfactory and permits the use of the more economical reinforced concrete column on floors where the ratio of length to diameter is not objectionable.

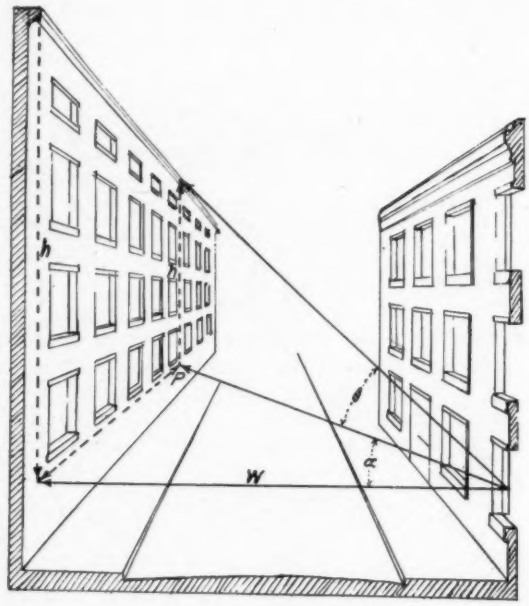
The concrete filled steel pipe is a type of column for which formula (6) is used with a maximum stress of 14000 lb. per sq. in., for the outer shell of concrete is fireproofing completely detached from the concrete in the core.

Hollow cast iron cores filled with concrete and surrounded by a spirally reinforced shell of concrete form another type of stiffened columns. The ratio of deformation between cast iron and concrete is smaller than that between steel and concrete, ranging from 4 to 6 for cast iron whereas it ranges from 10 to 15 for steel. The strength ratio is also smaller. A combination of the two materials permits the use of high stresses in both and is thus economical, provided cast iron may be purchased at a satisfactory price in competition with steel.

Sky Brightness

THE brightness of the sky was measured almost daily at the American University, Washington, D. C., between April 5 and July 14, inclusive, and at Chicago, Ill., between July 19 and August 13, inclusive, 1921.

About half the Chicago measurements were made on top of the dome of the Federal Building, in the Loop district, one of the smokiest sections of the city. The remainder were made at the University of Chicago, which in summer is comparatively free from smoke when the wind



A diagram illustrating the formula used to determine the shading effect of buildings and other objects

blows from the lake. South East and South West winds, however, bring considerable smoke from South Chicago and the Union Stock Yards, respectively. There is little smoke in the atmosphere at the American University, D. C.

A comparison of the Washington and Chicago measurements shows that toward the sun on cloudless days the sky brightness does not differ materially at the two places, but opposite the sun the horizon in Chicago is darkened by the smoke, especially in the Loop district.

With a cloudless sky the direct solar illumination in Chicago is noticeably weaker than at Washington, and in the Loop district, with the sun not more than 40 deg. above the horizon, it averages 80 per cent as intense. The illumination on a vertical surface facing 180 deg. in azimuth from the sun, computed from the sky brightness measurements, averages only about two-thirds as intense as the illumination computed from similar measurements for Washington.

With the data obtained it becomes possible to compute the illumination resulting from the sky brightness on a horizontal surface and on vertical surfaces facing the selected points on the horizon.

The following expression is used to determine the shading effect of buildings and other objects on the opposite side of a street:

$$Tan\ \theta = \frac{h}{w}\sqrt{\frac{1}{1 + tan^2\ a}}$$

in which w = the width of the clear street space,

h = the height to which opposite buildings, or objects, extend above the center of a window that is under consideration,

a = the angle between a line normal to the window surface and a horizontal line to a point p on the row of buildings,

θ = the angular height of the building above the point p, as seen from the center of the window.

Let $h=2w$, w, and $1/2w$, respectively, and let the row of buildings be of infinite length. We obtain the following relations between a and θ

	$a=$	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
$h/w=2$	$\theta=$	63.4°	63.1°	62.0°	60.0°	56.9°	52.1°	45.0°	34.4°	19.1°	0.0°
$h/w=1$	$\theta=$	45.0°	44.6°	43.3°	40.9°	37.5°	32.7°	26.6°	18.9°	9.8°	0.0°
$h/w=\frac{1}{2}$	$\theta=$	26.6°	26.2°	25.2°	23.4°	21.0°	17.8°	14.0°	9.7°	5.0°	0.0°

The foregoing is from a recent publication issued by the Weather Bureau in the U. S. Department of Agriculture, which contains reprints from the *Monthly Weather Review,* September, 1921, 49: pp. 181-488.

The utility of measurements and computations such as are described in the publication is shown by a reference to recent studies in relation to electric lighting current requirements. The publication is one of considerable value and contains a promise of further investigations taking into account reflection of light from ground surfaces and from walls of buildings and other objects.

Standardization

THE Secretary of War has directed that: "The Supply Branches of the Army utilize in connection with their specifications the standards that have been or may be adopted by the American Engineering Standards Committee."

National Building Code

THE Building Code Committee of the Department of Commerce is at present preparing suggestions for minimum requirements for small houses and expects soon to issue a preliminary report.

Fire Tests of Brick Walls

IN the 1921 Report of the Director of the Bureau of Standards it is stated that tests of brick-wall panels, 11 feet high and 16 feet wide, are being made in the Bureau's testing furnace at Washington. This is the initial series of a number that it is proposed to carry out with this equipment, the intention being to include all the wall and partition materials in common use. It was deemed advisable to introduce the tests with brick first, because brick is a primary building material that has been in long and universal use, and the values obtained with each thickness can be used as a standard of comparison in interpreting the results with other materials. There is at present much demand for information on the fire values and stability under fire conditions of brick walls. Opinion as reflected in building ordinances varies greatly relative to wall thickness requirements, and while this is due in part to considerations other than those relating to fire, it is thought that a properly planned series of fire tests will help materially to determine the minimum thickness safe for use.

The panels are built by a masonry contractor at a fixed price per panel, as determined by competitive bids. The series will include tests with brick made of two types of surface clay and one shale, and also with sand-lime and Portland cement brick. Studies will be made on the effect of changing the cement and lime content of the mortar. The panels are either built solidly into their containing frames to approximate conditions of restraint sometimes present in practice, or they are built free from the sides and top of the frame, some with stiffening pilasters at the ends to simulate conditions of use in the upper stories of some buildings. Heat is applied to one side of the panel, using fuel oil atomized by jets of steam or compressed air, and temperatures are measured at a number of points in the furnace as well as on the exposed and unexposed faces of the panel and at intermediate points within it. The relative deflections of panel and restraining frame are measured, as also the deflections of the restraining frame itself. The fire test is continued for six hours, provided failure does not occur earlier. Water will be applied in some of the tests after a one-hour fire exposure.

The series will consist of about 25 tests of 8-inch and 12-inch brick walls of the solid and of the hollow type, of which 9 tests have been completed. During 1920 the equipment was tested out, and some changes deemed necessary were made. Two preliminary tests were made of wood stud and plaster on metal-lath partitions. The work with the brick panels was done during the last five months of the fiscal year. While too early as yet to give definite conclusions, the tests indicate that within limits as to height the 12-

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inch wall is a stable and effective fire barrier. Relative to the 8-inch wall, less definite statements can be made, although under limitations as to exposure, height of wall, and lateral support, which it is proposed to establish in this and related investigations, the safe use of the 8-inch wall may possibly become adequately defined.

Retardant Fire Construction

THE following items of interest to architects have been culled from the 1921 Report of the Retardant Division, Protection Department, in the Underwriters' Laboratories:

In window construction the tendency among the manufacturers of hollow metal windows appears to be towards the construction of a heavier window, with a view to increasing the durability. These windows are generally spoken of as steel plate windows to distinguish them from the sheet metal windows on the one hand and the solid section windows on the other. It is possible that the Laboratories will conclude to adopt this designation.

During the year the Laboratories have tested one hollow metal door designed for use in passenger elevators. Report on this door has not as yet been forwarded to the Council. It is considered worthy of comment only because horizontally sliding passenger elevator doors have never before been submitted for test and the study of the device brings up some unusual features.

Judging from the character of roof coverings submitted, the tendency appears to be towards the use of asphalt saturated rag felt shingles in place of the old roll roofing. This indicates a decided advance in the fire protection afforded as well as in the durability of the covering used, as shingles have at least twice as great a thickness when laid as the old roll roofing and are uniformly coated with an inert surfacing such as gravel, slate or materials of like character. In addition two manufacturers are developing an asbestos felt shingle, which, under test, gives much better results than the rag felt shingle.

It is expected that before long the Laboratories will issue reports on some of the usual forms of wall constructions, classifying these constructions in accordance with the new fire resistance classification—that is, a certain type of wall will be classified as a "R 1 hr., R 2 hr., R 3 hr. wall" etc. It is expected that ultimately all retardants will be given this classification, and it is felt that when this is finally incorporated as a part of the regular procedure on these devices, the Laboratories' reports will be much more used by rating bureaus.

Elevator Interlocks

TECHNOLOGIC Paper No. 202 of the Bureau of Standards gives the results of a field survey of several thousand elevator landings equipped with various types of mechanical and electro-mechanical interlocks and contact devices. The work was done in co-operation with the American Society of Mechanical Engineers. The statistics show that 73.8 per cent of all fatal accidents might be prevented by well-designed interlocks.

The following definitions and specifications are submitted as tentative suggestions suitable for inclusion in an elevator code and are intended to give adequate protection and to mitigate the hazards previously set forth. From the evidence thus far accumulated the use of a hoistway-door interlock seems advisable, and this protection should be required on passenger elevators at least.

1. Definitions

Hoistway-Door Interlock.—A hoistway-door interlock is a device the purpose of which is—

1. To prevent the normal operation of the car, except by the use of a leveling device, unless (*a*) (door unit system) the hoistway door opposite which the car is standing is locked in the closed position; or (*b*) (hoistway unit system) every hoistway door is locked in the closed position.

A hoistway door or gate shall be considered locked in the closed position when within 4 inches of the full closure. If in this position, and any other up to full closure, the door or gate cannot be opened from the landing side more than 4 inches.

Interlocks which permit the starting of the car before the door is fully closed shall be so equipped that except when the door is locked in the position of full closure the door or gate can be opened from the landing side to the position approximately 4 inches from full closure.

2. To prevent the opening of a hoistway door (except by use of a key) from the landing side when the car is passing a landing; except when the car-control mechanism is in the "stop" position.

Hoistway-Door Electric Contact.—A hoistway-door electric contact is an electrical device the purpose of which is to prevent the normal operation of the car except by the use of a leveling device unless (*a*) (door unit system) the hoistway door opposite which the car is standing is in the closed position, or (*b*) (hoistway unit system) every hoistway door is in the closed position.

Emergency Release.—An emergency release is a device the purpose of which is to make hoistway-door electric contacts or hoistway-door interlocks inoperative.

2. SPECIFICATIONS

Hoistway-Door Interlock Specifications.—(*a*) The prevention of the operation of the car by a hoistway-door interlock shall not be dependent on the action of springs in tension nor solely upon the completion or maintenance of one electrical circuit.

(*b*) The agency used to perform any interlocking function shall be such that even without lubrication of the mechanism the intended functioning of the device will be completely performed.

(*c*) The locking of the hoistway door and the interlocking of the car control shall be accomplished by an interconnection between the parts of the device. This interconnection may be mechanical, electrical, hydraulic, or pneumatic.

(*d*) It shall be necessary to accomplish the locking of the hoistway door opposite which the car is standing before the car can be moved by normal operation.

This paragraph applies to both the door unit and the hoistway unit system.

(*e*) If without damage to, removal of, or interference with any part of the elevator or hoistway equipment the door opposite which the car is standing becomes unlocked, it shall be impossible to start the car by normal operation.

Hoistway-Door Electric Contact Specifications.—(*a*) The prevention of the operation of the car by an electric contact shall not be dependent on the action of springs in tension nor solely upon the completion or maintenance of one electric circuit. The failure of the device shall manifest itself by preventing the starting of the elevator from the landing.

(*b*) The device shall be such that without lubrication of the mechanism the intended functioning will be completely performed.

(*c*) All live parts shall be inclosed.

Emergency Release.—(*a*) The emergency release shall be in the elevator car, plainly visible to the occupants and reasonably, but not easily, accessible to the operator.

(*b*) To operate under emergency conditions, it shall be necessary for the operator to hold the emergency release in the emergency position. The emergency release shall be so constructed and installed that it cannot be readily tampered with or "plugged" in the emergency position.

(*c*) Rods, connections, and wiring used in the operation of the emergency release that are accessible from the car shall be inclosed to prevent their being tampered with readily.

Steel Sash for Cellars

A CELLAR window in steel is now on the market. The makers claim that it will be sold to compete in cost with wood frame and sash.

Hollow Tile Investigation

THROUGH a co-operative arrangement with the Hollow Building Tile Association the Bureau of Standards is making an investigation on the fire-resistive and related properties of hollow-clay tile. Clay and hollow tile, representative of the types generally used, are made into specimens for tension, transverse, compression, absorption, freezing, vitrification, fusion, and fire tests. For the latter a gas-fired furnace was built in the ceramic laboratory of the Bureau to accommodate panels up to 3 feet wide and 5 feet high and subject them to working load during the fire test. The panel at present used is 1 foot wide and consists of 8-inch double-cell tile, with which 26 fire tests have been made, the results of which are chiefly of value for comparing the fire-resistive properties of tile made from different clays and in different forms. It is proposed to study the effect on fire-resistive properties of ground-burnt clay (grog) additions to the raw clay in molding; also of burning to different degrees of hardness.

The auxiliary tests indicate large variability in strength and elastic properties, and as yet no definite relation has been established between absorption and compressive strength.

Specification for Interior Varnish

THE Interdepartmental Committee on Paint Specification Standardization presented a recommended specification for interior varnish in Sept. 1921. The following general clauses are given:

The varnish shall be suitable for general interior use, including both rubbed and unrubbed finish, exclusive of floors. It must be capable of easy application with a brush in the ordinary manner according to the rules of good standard practice, must flow out to a good level coat free from runs, sags, pits, or other defects, and dry with reasonable promptness to a hard, somewhat elastic glossy coating which can be rubbed in 48 hours or less. The manufacturer is given wide latitude in the selection of raw materials and processes of manufacture, so that he may produce a varnish of the highest quality. The varnish must meet the following requirements:

Appearance.—Clear and transparent.

Color.—Not darker than a solution of 3 g of potassium dichromate in 100 cc of pure sulphuric acid, specific gravity 1.84.

Flash Point (*closed-cup*).—Not below 30° C (85° F.).

Nonvolatile Matter.—Not less than 45 per cent by weight.

Set to Touch.—In not more than 4 hours.

Dry Hard.—In not more than 24 hours.

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Dry to Rub.—In not more than 48 hours.

Toughness.—Film on metal must stand rapid bending over a rod 3 mm (⅛ inch) in diameter.

Working Properties.—Must have good brushing, flowing, covering, leveling, and rubbing properties; and must show no impairment of luster or other defect when used where natural or illuminating gases are burned or when subjected to air currents during the process of drying or application.

Water Resistance.—The dried film must stand application of cold water for not less than 18 hours without whitening or showing other visible defect.

The complete specification, together with detailed description of methods of testing, is contained in Circular No. 17, Bureau of Standards. Copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents per copy.

Free Technical Service

THE Research Information Service of the National Research Council, Washington, D. C., announces that it will endeavor to furnish ascertainable information on scientific problems, technical processes, laboratory methods, researches in progress, publications, bibliographies of special subjects, etc.

No charge is made for such information; but where prolonged searches or photostat copies are necessary, these may be charged for at cost after agreement with the inquirer.

Research Graduate Assistants

TO assist in the conduct of engineering research and to extend and strengthen the field of its graduate work in engineering, the University of Illinois maintains fourteen Research Graduate Assistantships in the Engineering Experiment Station. Two other such assistantships have been established under the patronage of the Illinois Gas Association.

These assistantships, for each of which there is an annual stipend of $600 and freedom from all fees except the matriculation and diploma fees, are open to graduates of approved American and foreign universities and technical schools who are prepared to undertake graduate study in engineering, physics, or applied chemistry.

An appointment to the position of Research Graduate Assistant is made and must be accepted for two consecutive collegiate years, at the expiration of which period, if all requirements have been met, the degree of Master of Science will be conferred. Not more than half of the time of a Research Graduate Assistant is required in connection with the work of the department to which he is assigned, the remainder being available for graduate study.

There will be ten vacancies to fill. Applications for appointments to these positions should be received by the Director of the Engineering Experiment Station by March 1, 1922, on blanks which will be supplied on request.

New Chimney Ordinance

THE National Board of Fire Underwriters, 76 William Street, New York City, announces that the revised chimney ordinance is ready for distribution. It is probably the most complete ordinance of its kind ever published and bears the endorsement of twelve large national organizations associated with the building industry. It is stated that in a recent year 12.4% of all dwelling house fire damage was found to be chargeable to defective chimneys and flues, and this figure represented 66.6% of the losses in all occupancies from this cause. The importance of properly built chimneys is evident.

Structure of Metals

CIRCULAR No. 113 of the Bureau of Standards is entitled "Structure and Related Properties of Metals." It contains 104 pages and is well illustrated. Copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents per copy.

Standards in the Pump Industry

YEARS of study and research are reflected in a booklet entitled:—"Trade Standards in the Pump Industry," that has just been published by The Hydraulic Society.

The work explains trade names and defines trade and hydraulic terms. Recommendations and suggestions are given as a guide for buyers and specification writers. It is believed that the booklet will eventually be looked upon as a standard like the national engineering society standards. Copies may be obtained free on request from the Secretary of the Hydraulic Society, C. H. Rohrbach, 50 Church Street, New York, N. Y.

A Correction

MR. John T. Comes, Architect, Pittsburgh, Pa., asks that an error, in the article on "The Illumination of Churches" by Mr. Harold W. Rambusch in the January 18 issue, be corrected.

On page 75 Mr. Comes was given credit for St. Mary's Church, Johnstown, Pa. This was an error as Mr. Comes designed only the decorations for this building.—EDITORS.

DEPARTMENT OF SPECIFICATIONS

FOR the construction of heavy spread footings of concrete for piers, columns or foundation walls forms may or may not be required, the desideratum being the nature of the soil and the depths of the footings. Even those cases that seem to preclude the building of forms for concrete may require their construction in order that none of the surrounding soil may fall into the wet concrete.

Previous articles have contained discussions of pile and caisson specifications and it will, then, be understood that the foundations mentioned in this and subsequent articles will be ordinary mass foundations, either plain or reinforced.

Since general excavations will not include the removal of earth from footing and foundation wall sites—being included in the class of trim or finished excavation work as distinguished from steam shovel or other methods of soil removal in mass—it will be necessary to require that the contractor for foundation work will do all trimming of excavations as left by others and do all excavation work for footings and foundations as required for the correct installation of his work. Excavations must, in all cases, extend to good bearing soil.

Provisions also must be made for the furnishing, by the contractor, of experienced surveyor's services for the correct establishment of the lines and grades that must be followed in the construction of the foundations. If grades or lines have been established on benches by previous contractors, such work must be checked very carefully so that any errors that have occurred may be corrected immediately.

If no previous soil explorations have been made and if more accurate information is desired and the gaining of it is not provided elsewhere, the foundation specifications must provide for borings for certain particular footings or for all of them. Previous articles in this department have treated of this subject and the reader is referred to them for detail information on these points.

Forms for concrete may be of wood or steel (except in those cases where the bank of excavation is used as a form), the choice sometimes being made in the specifications while otherwise the contractor is given the opportunity to use whichever material he desires. The use of steel forms is becoming more common and since it produces a smooth finish, which is quite desirable for foundation walls, its more frequent use cannot be too strongly commended.

Foundation wall forms that are to be placed adjacent to earth banks restrained by sheet tiling must be built around the shores or else the shoring must be so designed that a short height of wall may be built, the shores re-arranged after this concrete has hardened sufficiently to receive the thrusts that will come upon it and the wall then carried to completion in a sectional manner. If waterproofing of the foundations is not required and the shores are not too complicated or too numerous, there is no objection to pouring concrete around them, the hole thus left (upon removal of shores) to be filled in with concrete later. But if waterproofing is required this method should not be used, the specifications requiring that shores be placed so as not to leave holes in walls and further requiring that the foundation contractor refuse to pour concrete in walls where shores will leave openings detrimental to the concrete work.

The specifications for foundation wall forms also must require bracing of exterior retaining walls of such a character that they will be held in their correct position. This is especially necessary where it is believed that no special precautions, such as the installation of sheet piling, will be required to hold the banks. Heavy rains may alter what one's judgment indicates will be a substantial earth bank.

Other points in respect to forms for foundation walls will be treated in the next issue of this paper in connection with general specifications for structural concrete work, of which the foundations really are a part.

ALTHOUGH poured concrete is becoming almost universal in its application to foundation construction, the fact remains that other materials are still in use for foundations. Among these will be found rubble stone, brick, concrete blocks and clay tile of varying kinds. Since the choice of materials for foundations does not always lie with the specification writer it seems well to include in this discussion these alternative materials.

Rubble stone as used here must not be understood to mean any particular kind of stone but, rather, the manner of laying it, as is commonly understood. With few exceptions any stone that is used locally for foundation work will be a good stone. It must be sufficiently hard to give an ample factor of safety for crushing strength and it should be susceptible to smooth dressing for exposed surfaces, unless a rock surface of extremely irregular projections is more desirable from an esthetic standpoint.

If footings are to be of stone the pieces should be of large dimension so as to eliminate small pieces of two square feet or less in area. As a

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matter of fact, unless the design demands otherwise, the larger the stones are the better will the wall be built.

Before laying stones in the wall they should be moistened with water in dry weather or left dry in freezing weather as is customary with materials of similar character. The mortar for laying this stone work should be a cement mortar with lime gauging of a small amount to fatten it. The ends of stones should be dressed at right angles to the faces or at an acute angle of not much greater than forty-five degrees, so that a filling piece may be placed in the joint without using spalls. Stone spalls should not be used to fill up large spaces in stone work of this nature as the joints should be kept to a thickness of not to exceed three-quarters of an inch. The stones should be laid to break joints in courses and if the thickness of the wall is greater than the average narrowest width of the stone, bond stones should be placed at not to exceed three feet on centers each way. A preferred way is to provide a bond course about every two feet in height.

The outer and inner faces of the stone walls should be kept in approximately plain surfaces parallel to one another. The specification should require that all cutting and fitting that will be necessary to shape the stones to proper size should be done by the contractor, and that triangular stones should not be used. In masonry work of this kind it is necessary to keep the courses approximately level, although there is no objection to having occasional stones extending in height for two of the average courses. If such stones are available and if they are of the wall thickness they act not only as bond stones, for horizontal courses but for vertical courses as well.

Where pipes are to pass through walls stones must be provided of sufficient length to span the openings with a bearing on either side of at least six inches. As these openings are rather difficult to make watertight it would be well to provide openings large enough so that they may be filled with concrete after the pipe work is installed, with spaces for caulking left around the pipe.

Occasionally, in order to make the wall somewhat damp-proof, the specification writer may wish to provide a cement mortar coat on the outer face of the stone wall where it will be against the earth. This may be a mortar of same consistency as that used for laying the stone, and it should be applied in one coat of about three-eighths inch thickness brought to as uniformly smooth a finish as the stone surface will permit. No attempt should be made to apply a thick mortar coat as it might sag or crack and nullify the damp-proofing effect for which it is provided.

For exposed walls above the grade it will, of course, be desirable to specify large stones on the visible face more for the sake of appearance than strength of construction. As mentioned above, the question of stone finish such as rock facing, must be considered in this connection. The top course of stone that is to receive the super-structure work must be brought to a level and finished off with a cement mortar coat.

As subsequent articles will treat of stone masonry work from the foundations above it is believed that a study of these points and their incorporation in specifications will provide for the accomplishment of stone foundation work in a correct manner.

BRICK foundations are still of great use especially for minor construction work such as residential or small industrial work, especially in localities where good concrete materials are not available. The brick for foundations should be hard burned, whole and new. It is never safe to use old brick for foundations unless loads are extremely light or it is known absolutely that weathering to which the brick has been subjected, has not been detrimental to its physical structure.

If a concrete footing is not provided the bricks may be laid directly on the soil at the bottom of the trench. The soil should, of course, be as near level as possible and the first course of brick should be laid in a bed of gauged cement mortar. If desired, the footing may be made wider than the thickness of the wall with courses stepped up as may seem necessary. If a stepped footing is used projections should not exceed two-thirds of the thickness of the brick. The brick work should be laid in gauged cement mortar and if it is carried above the grade line, a damp-proof course should be provided approximately six inches above the grade line. This damp-proof course may be a coat of asphalt reinforced with one or two thicknesses of saturated felt, each layer being bedded in asphalt or in other medium of equal impermeability. Thin slate slabs or stone courses or even concrete has been used for this purpose. The object, of course, is to prevent capillary movement of moisture from the ground up into the super-structure.

The exterior surfaces of brick foundation walls where touching earth should be damp-proofed in some way. A coating of cement mortar may be used but a membraneous waterproofing consisting of asphalt with two or more layers of felt would be better, especially where moisture conditions come nearer requiring waterproofing as opposed to damp-proofing. In other respects the construction of brick foundation walls should not vary from the construction of super-structure brick walls, details of which will be the subject of later discussions.

Concrete block foundations should be laid in accordance with the above suggestions for stone and brick foundations.

HOLLOW tile may be used for foundations of light loads in residences or other small buildings. It has some advantages over brick because of the voids tending to arrest capillary attraction of ground water. In some respects the use of hollow tile is to be preferred over the use of brick although in other respects the use of brick should be given preference, and the matter of choice is the personal whim in the selection of materials. Hollow tile should have a footing of concrete or of large dimension-stone. The hollow tile should be laid in gauged cement mortar and damp-proofed courses provided above the grade line on those wall surfaces that are to be against soil, similar to those specified above for brick foundation walls.

It may be well here to mention that in some parts of the country vitrified clay wire conduit, such as used by the public utility companies in underground work, has been used with a very great deal of success for small residence foundations.

Having covered to some extent the particular requirements of foundation walls, there are some points governing the construction of isolated pier foundations under interior columns. These piers may be made of dimension-stone or brick but it is not believed that any serious attempt has been made to construct such footings of hollow tile. The stone or brick would be laid in a manner similar to that mentioned above for a wall construction. Quite often isolated piers are to receive steel grillage provided under steel columns or brick piers. This construction, of course, occurs in buildings of perhaps six stories or over where loads are heavy, such as will be found in warehouse or heavy industrial construction. The steel grillages must be bedded in cement mortar grouted with cement grout. If concrete footings are used, it is customary to encase the grillages with concrete, embedding the grillages in the concrete at least two inches.

The reader should remember that a number of points not mentioned above will be mentioned in later articles of this series covering particular work. In order to minimize the duplication of references, it is believed that where the work that is to be specified is applicable not only to foundations but to super-structure work it should be mentioned in the discussion of major uses. Such references have been made above and similar references will be made later to this or other preceding discussions so that the connection between the subjects of the various series will be complete.

Why Building Will Increase

THE outstanding condition that points to an unprecedented building year is the present unsatisfied demand for buildings of every class.

December's remarkably good showing, following four months with high records, gives confidence to every one engaged in the building industry. There will be increased activity in every department of building, but in view of the well established shortage of residential types, it is reasonable to expect the greatest activity will be in apartment houses and dwellings in suburban localities.

A four billion dollar construction year has been prophesied for 1922. To meet this enormous volume every manufacturer in this country will be working overtime to supply the materials architects will specify.

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REVIEW OF RECENT ARCHITECTURAL MAGAZINES

BY EGERTON SWARTWOUT, F.A.I.A.

THE *Architects' Journal and Architectural Engineer, London, December 7.* This number is almost entirely devoted to the exhibition of American Architecture, which under the auspices of The American Institute of Architects was shown in Paris during the summer and later moved to London at the earnest request of the Royal Institute of British Architects. A number of illustrations of representative work are published and there is an editorial comment which speaks highly of the exhibit, saying that it is "certain to have a strongly stimulative influence on English Architecture" but that "as English traditions, unlike the fickle English climate, are not subject to facile, sudden and violent changes, American methods of design and composition are not likely to be closely copied in this country." It also notes an "earnest striving" to give concrete expression to modern ideals and aspirations and that the designs are for the most part "purely organic."

There is an apparently verbatim report of the speeches of Bertram Grosvenor Goodhue and of Donn Barber, who, being in London, were invited to speak at a meeting of the Royal Institute of British Architects, and there is also a picture of Mr. Goodhue which is herewith reproduced. It isn't a particularly good picture and the dejected appearance of the distinguished architect warrants the caption under the picture—"Mr. Goodhue Weeps over the Styles." This is not, as it sounds, a gentle pastoral study in the Surrey fields, but refers to a statement of Mr. Goodhue that he *does* dislike modern classic architecture and at the same time strenuously denies that he is a Gothicist, but that he dreams that a "time will come when Architecture, as we understand the work will cease to exist and when such ornament as is used will be as instinctive and inevitable as it used to be." This delightful uncertainty as to where one stands is probably enough to make anyone weep; but Mr. Barber does not weep; "His crisp, clear phraseology cut at once like a knife into one's intelligence—no easy matter. (sic) His address—he would hate to have it called a speech—lasted for more than half an hour." Mr. Barber gave a brief outline of architecture in this country and referred to the high buildings and the zoning laws, matters that have particular interest in London because of the agitation now going on to increase the heights of buildings. Probably there is a demand for greater latitude in height in certain congested areas in London, and the Royal Institute of British Architects in working out this problem will have the advantage of the experiences we have gained here at so much cost, but it seems most unfortunate that the staid cities of the old world should be invaded by these monstrous monuments of efficiency.

From "The Architects' Journal"

The Architect of London, December 2, is also largely devoted to the American exhibition and gives a number of cuts which are rather better selected than the preceding paper, and in the description of the exhibition it states that Lady Astor's speech, which has been so widely quoted in this country, to the effect that "no architect should ever be allowed to build a family house until he has married and has had three children; and even then he must submit the plans to his wife first," wasn't really an opinion of the lady herself, but was a portion of a letter she had received from a friend who "managed to combine fox-hunting with socialism." This unusual combination may account for the quaint ideas on architecture attributed to Lady Astor.

The Architectural Review, London, December. The frontispiece is a drawing by Walcot of the Temple of Apollo at Thermos. The reviewer must confess that his knowledge of Thermos is confined to a certain well known article of trade in this country, and it is therefore difficult to criticise the restoration. The temple being entirely of wood has naturally disappeared, but there were apparently found certain fragments of the metopes and of the walls of the peristyle, which were decorated with slabs of terra cotta. Presumably the unusual size of the metopes in the illustration was dictated by the fragments that

remained, but the restoration seems a poor one. It is topheavy, and certainly no Greek architect, even in the provinces, would be guilty of such outrageous proportions. It may be, of course, that this temple was laid out according to the ideas of Mr. Hambidge, and that the supply of string ran out when they came to do the lower part, thus accounting for the meagre appearance

From "The Architectural Review, London"

Wolseley Building, London
W. Curtis Green, Architect

of the supporting columns. Another etching by Mr. Walcot in the same number, entitled "The Visit of Comodus to the brothers Quintilii" is an extremely interesting composition, and if the brothers Quintilii did not really live in such a monumental house they should certainly have done so.

The Wolseley Building, Piccadilly, is illustrated at length and a view of it is herewith reproduced, because of its resemblance to many similar structures in this country. It is simple and dignified but not very well done, the piers of the arches in the lower story being much too small to provide proper support for the columns above. The plan and the interior of the show room are extremely interesting.

Architecture, New York, December. The frontispiece is a good photograph of a model of the George Rogers Clark monument by Robert Aitken and H. Van Buren Magonigle, which is vigorous and well composed. David B. Emerson has an article on "Common Sense Applied to Concrete" which is worth reading, and Frank E. Wallis shows some photographs and a plan of a house in North Carolina. David Varon has an article entitled "The Study of the Human Figure in Its Relation to Architectural Design." He says that "the least that a student architect ought to learn from this analysis is: simplicity of design, no matter how intricate the problem. Head, chest, abdomen and limbs are the four chapters (or five, by counting arms and legs separately) of the body." We would make the count seven for a normal human being, but perhaps Mr. Varon was referring to a victim of the late War or a museum freak. The whole article is arrant nonsense.

Sterner and Wolfe present a number of illustrations and several plans of a house at 2 East 63rd St., New York. The general scheme is extremely good. Frank Goodwillie and Wesley S. Bessel

From "The Architectural Record"

Elevation of National State Bank, Elizabeth, N. J.
Dennison & Hirons, Architects

show an administration building for the Globe Indemnity Company of Newark which is simple and dignified, and there is an article on "Oriental Rugs of Today" by Samuel R. T. Very which is good.

The Western Architect, November. In this number is featured the Quigley Memorial Chapel, Chicago, by Zachary T. Davis. This is a very ambitious building and should be very successful, but somehow or other it is not entirely so. The view from the corner is remarkably good but the interiors and the other side are rather hard and

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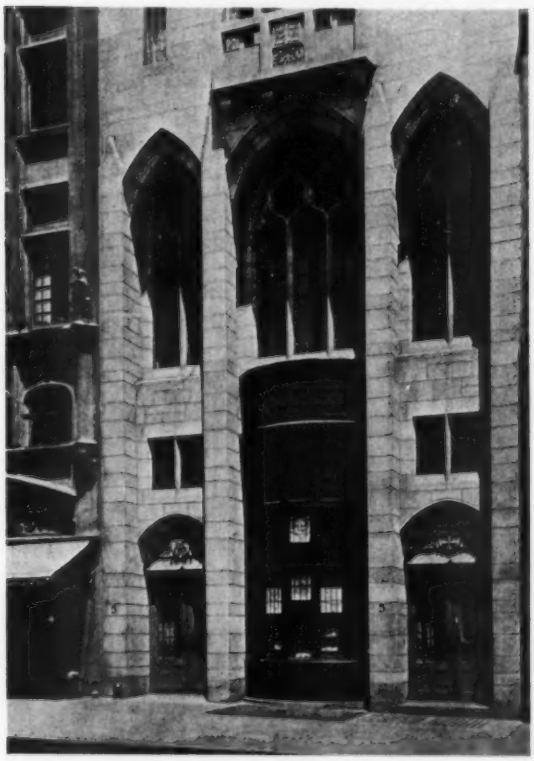
uninteresting. The plan shows that the large buttresses, which are an important feature of the elevation, disappear almost entirely when they cease to be in elevation and are concealed by the adjoining building, leading one to the natural assumption that these buttresses are for exterior effect only, and there is a series of neat little iron columns concealed somewhere or other for the support of the roof.

From "The Architectural Record"



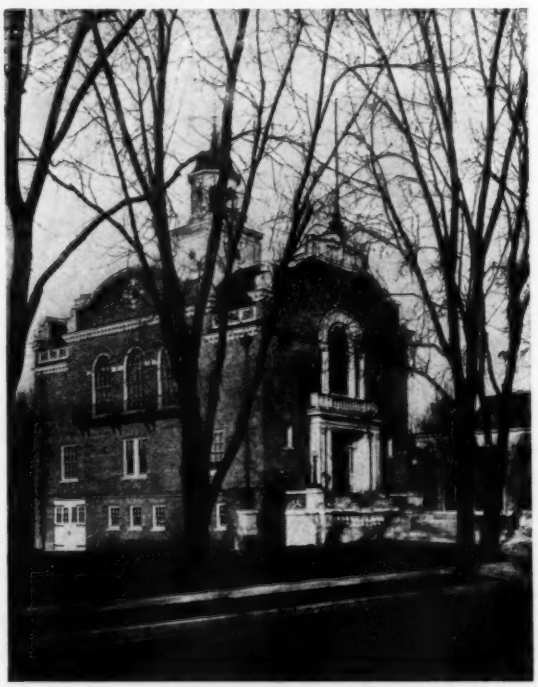
Detail of the Bible House, New York City
Wilfred E. Anthony, Architect

Cady and Crosby have built a bank in Chicago, the Madison and Kedzie State Bank, which anyone would know is a bank because it has large Corinthian columns in front, together with a reduced copy of the Erechtheum doorway. I wonder how many times that poor doorway has been used on bank buildings in the United States. In the old days a bank that was a bank had a conical shaped gilded structure which was supposed to be a beehive, and this beehive without the bees was plastered on a sanded board painted black. Just what connection bees and banks have is uncertain, but it was a sign that was generally recognized. Nowadays its place seems to have been taken by the doorway of the Erechtheum.

The Architectural Record, December, opens with a continuation of the article on the work of William Lawrence Bottomley which was commented on in last month's criticism. The houses shown are generally good, particularly one in Roslyn, L. I. The mausoleum in Portland, Maine, is a little box-like and woodeny in character; the finial on the stepped roof is too small to silhouette well and the fragmentary inscription in the frieze is unfortunate. The coelnaglyphic sculpture does not show up well in the large photograph but looks interesting in the smaller photograph of the mausoleum as a whole. There are some interior views of the church of St. Vincent Ferrer, by Bertram G. Goodhue, which are very impressive, and Francis A. Nelson shows two photographs of a Post Office in Upper Montclair, very picturesque indeed in general effect, although one would not expect to find that style of architecture in Upper Montclair.

Dennison and Hirons have a bank in Elizabeth which is good, although the central motive, in which the door takes the place of the lower part of the window, is a motive that is not always satisfactory, particularly in the present case, where in the interior there is a second and smaller door inside of the larger one. The Bible House, by Wilfred E. Anthony, is represented by three photographs. The lower part of this building is extremely good and appropriate, but the upper part, particularly the termination of the façade in two octagonal piers, is not so pleas-

From "The Architectural Record"



Front View—Borough Hall, Roselle, N. J.
Warrington G. Lawrence, Architect

ing. The First Methodist Episcopal Church in Asbury Park, by Lucien E. Smith and Harry E. Warren, would have been much more successful had the architects not been obliged for obvious reasons of economy to adopt a simple square box-like plan. The church is of a simple brick type using North Italian Romanesque motives; the detail is good and well carried out, but much of the charm of this type of architecture is the irregular plan and the thick walls which are typical of the style. In other words, the church suffers from the undoubtedly forced use of modern methods of construction. The central dome springs from square cross walls so that the pendentives come to a point at the bottom, which is not a particularly pleasing or structural form; but as I have said before, the detail is good and the general effect is simple and interesting.

Warrington G. Lawrence presents a very novel idea in his town hall at Roselle, N. J. It is good but it would be much better if the two side gables had been eliminated entirely, or simplified.

Frank Chouteau Brown continues his articles on "Tendencies in Apartment House Design." His articles represent a great deal of industry in collecting various plans and will undoubtedly be published in book form and should prove valuable. He presents one very remarkable plan of an apartment in Cambridge, Mass., which fairly bulges with polygonal shaped rooms and looks as if it might have been designed by a bee.

The Architectural Forum, December. Malcolm Rice has an article on "Sgraffito and Its Application" which is well illustrated and authoritative. Griffin and Wynkoop show a restoration of York Hall, an old estate in Virginia. The old building is not particularly good architecturally on the outside. The entrance vestibule is a rather clumsy brick arrangement with two openings instead of a central one. The windows on the side are not symmetrical owing to the exigencies of the plan, and the treatment of the gables is not very good. The restoration is remarkably well done and there isn't a doubt the building is much better than it ever was, the only possible criticism being the use of large, graduated slates on the roof, which seems to detract somewhat from the scale, particularly of the smaller buildings. Griffin and Wynkoop are to be congratulated on their work.

There is a timely article on "Manufacturers' Literature" and the effort made by the Institute to eliminate the waste in this connection, and George B. Post presents photographs of an office building for Post and Flagg which is very simple and dignified.

The Journal of The American Institute of Architects, January. The editorial matter is interesting but has nothing to do with architecture, and criticism of it is out of place here. Charles G. Harper carries his article on "Thatch" from Nether Wallop to Bere Regis and Piddletown, with more of the naive illustrations in the ground glass slate style.

Edwin H. Brown gives a summary of the meeting of the Board of Directors in relation to the Committee on Small Houses, and publishes a reproduction in miniature of one of the matrices supplied to newspapers by the Architects' Small House Service Bureau. This Committee is doing a very constructive work and should be encouraged.

There is a report of the speeches of Mr. Goodhue and Mr. Barber above referred to and several articles on Community Planning and Housing.

Shottery, near Stratford on Avon, England
(From a Photograph by Robert M. Blackall)

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THE AMERICAN SPECIFICATION INSTITUTE

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The American Architect and The Architectural Review has gratuitously set apart this section for use by The American Specification Institute.

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The purpose, simply stated, is to afford an organization which, it is believed, will become a most important element in architectural practice and building operations, a medium through which it may, without expense to itself, reach a class of readers that are most intimately identified with the field of the activities of The American Specification Institute.

Publishers, The American Architect and The Architectural Review.

Annual Winter Conference

TO everyone interested in specifications—especially specifications for concrete construction—the Board of Governors extends a cordial invitation to attend the Annual Winter Conference at the Chicago Engineers' Club, 314 Federal Street, Chicago, on the evening of Friday, February 10, at 6:30 o'clock.

This conference is one of the bi-monthly conferences held by the Institute for the purpose of crystallizing the thoughts of architects and engineers who are interested in the improvement of specifications for building and engineering structures and equipment.

The program for the evening will include a banquet, following which there will be a discussion of Specifications for Concrete. The Board of Governors has prepared, as the subject of Bulletin No. 6., a specification for concrete which is based on and follows very closely, the progress report of the Joint Committee on Standard Specifications for Concrete. Other sources have furnished data of value in the compilation of these specifications and it is believed that the discussions will be of very great interest.

Reservations for the banquet may be made by application to the Acting Executive Secretary at a cost of two and one-half dollars the plate. Those who wish to make reservations are requested to notify the Acting Executive Secretary in time to permit him to mail a copy of Bulletin No. 6 in order that discussions may be made with an intelligent understanding of the specifications.

Bulletins

BULLETIN No. 5—"An Analysis of a Specification"—presents a phase in the study of specifications that has not received the attention it deserves. The sub-divisions that are given study are; Definition, Purpose, Elements, and Precepts for Specification Writers. A fundamental in the study of anything is a correct understanding of the characteristics of that thing, the functions it is to perform and some means of accomplishing the desired object. One purpose of the development of this "Analysis of a Specification" is its use as a "yard-stick" for specifications. Careful study of this bulletin will show that, no matter what any particular specification may be, even though it be an order drawn in requisition form, some of the "Elements" will be found in the document under scrutiny. The Board of Governors asks that Bulletin No. 5 be given very close study by the members in order that it may be perfected and stand as a useful guide and accurate gauge in the determination of the correct contents of a specification. Acknowledgment is made of the helpful suggestions submitted by Mr. L. O. Kirk of Minneapolis, in the compilation of the "Precepts."

As stated in the memorandum accompanying Bulletin No. 6, it has been necessary to prepare Bulletins No. 9 and 10 for distribution with it. The subject matter of each of the bulletins is covered in a brief, but concise manner, yet in a manner that is sufficiently inclusive of details. Nevertheless members are requested to send in

their suggestions for each of them, especially for Bulletin No. 10.

Although the issuance of Bulletins No. 9 and 10 at this time is made ahead of Bulletins No. 7 and 8, the latter bulletins will be issued about February 1.

The Advisory Committee

THE Chairman of the Advisory Committee, Mr. R. J. Gaudy, has appointed the following members of the Institute as members of his Committee in addition to those announced previously:

Frederick A. Muhlenberg, Philadelphia, John Galen Howard, San Francisco, L. O. Kirk, Minneapolis.

New Members

The following new members have been elected: Curran R. Ellis, Architect, Macon, Ga.; Dewitt C. Gross, Engineer, Chicago; Seymour H. Knight, Engineer, Philadelphia.

Palazzo Schifanoja, Ferrara

(From a Photograph by Robert M. Blackall)

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BOOK NOTES

The Economic Design and Construction of Small Houses*

MR. ERNEST FLAGG has produced a book that is very much worth while. The co-operation supplied by the publishers crowns the result. The book, it is certain, will be received by the architectural profession with much respect. Mr. Flagg knows his topic, and, what is very much to the present purpose, knows how to write it. The drawings which accompany a scholarly written text, and which, we are informed, were made by the author, are all splendidly executed and with the most painstaking care. The arrangement of each subject on one large page, the grouping of the various elevations about the main floor plan permit of the easy comprehension of the design.

Throughout, the work is one that will command respect. The small house has been dignified by as much earnest and thoughtful study as could be given to larger undertakings. The book from cover to cover is full of "meat" and it may be safely stated that it marks the highest dignification of the problem of the small house that has ever been attempted in this country.

The contents of this book comprise some fifty-one essays, each taking up and discussing to finality the various essential things that enter into any enterprise in architecture, but, naturally, mainly from the point of view of the small house, Mr. Flagg writes well, states his facts solidly and makes his claims with courage. While there will, perhaps, be some dissension on the part of some architectural readers, none will withhold respect for a work wherein the author has, step by step, sought to justify his claims by the most scholarly professional methods.

At the outset, Mr. Flagg states that the object of the work "is to improve the design and construction of houses while reducing their cost." These desirable things he seeks to attain by many original methods. These, let it be known, are not methods based purely on theory. In each case there are presented completed houses to prove the argument.

While it is conceded by the author that it is hard to change long established building habits, it is as easy for individuals as it is for communities, to acquire bad building habits. These bad habits Mr. Flagg points out throughout his many theses, and he also points out how, in his judgment, they may be overcome. It is, therefore, possible to regard with respect a method so logical, even if the reader may not in some instances be fully in accord.

Mr. Flagg's small houses have stone walls. The designs throughout the work are based on the module system. There is a modulus or fixed unit of measure running through all parts. The author claims that great economies result from the use of this system. The leading essay is in its defense. As it is the foundation of design for everything that follows, it should be carefully studied. An interesting chapter on ridge dormers shows the advantages of these features in making available spaces that have been regarded as least desirable.

A particularly valuable feature of the work is the series of plans, and their discussion in the chapter devoted to them. "The collecting of plans" states Mr. Flagg, "is an interesting pursuit." He then proceeds to set forth his own methods of collecting and gives some exceedingly valuable and helpful suggestions for others.

"One of the best ways to design a building is to economize on ugliness." Thus reads the first sentence of the chapter on design. Even if nothing more were stated, the chapter would be something worth while. It sums up the whole essence of the planning of small houses. What has happened in the development of our suburban localities needs no description here. Every architect knows and deplores it. Certainly there has been a very prodigality of ugliness;—the result is obvious.

Enough has been quoted to inform the reader of the large suggestive value of this admirable work. It marks the best presentation of the small house from a definite point of view of architectural style and a fixed material that has thus far appeared.

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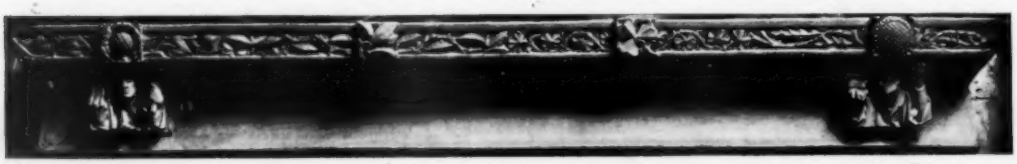
* *Small Houses, Their Economic Design and Construction, Essays on the Fundamental Principles of Design and Descriptive Articles on Construction. By Ernest Flagg, Architect. Full cloth, 150 pp. Size 13x15 inches. Price $10.00. New York, Charles Scribner's Sons.*



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PERSONALS

Philip S. Avery, architect, has moved his offices from 99 Chauncy Street to 15 Ashburton Place, Boston, Mass.

Robert B. Harris announces the opening of an office for the practice of landscape architecture at 79 West Monroe Street, Chicago, Ill.

The offices of Will Levy, architect, are now in the Dolph Building, Northeast corner of Seventh and Locust Streets, St. Louis, Mo.

E. P. Rupert, architect, has moved his office from 118 North La Salle Street, Chicago, Ill., to 5132 Drexel Avenue, that city.

Louis H. Sullivan, architect, has moved his architectural office from 1808 Prairie Avenue to 1701 Prairie Avenue, Chicago, Ill.

Royal Leonard Simmons, architect and industrial engineer, is now located in new quarters at 3 and 4 Beardslee Block, Elkhart, Ind.

Dr. Wm. Paul Gerhard, consulting engineer for sanitary works, has removed his office to 17 West Forty-second Street, New York City.

The Board of Education of Louisville, Ky., announces the re-opening of its architectural department with Edgar A. Rassinier as architect, and desires samples and catalogs.

It is announced that Jamieson & Spearl, architects, have moved their offices from the Security Building to Suite 1116-26 Arcade Building, St. Louis, Mo.

Adolph Goldberg, architect, wishes to announce that he has moved his office from 354 State Street to 164 Montague Street, Brooklyn, N. Y. Manufacturers' catalogs and samples are requested.

Fred A. Fuller, architect, formerly located at 1746 West Twelfth Street, Erie, Pa., is now at 307 Commerce Building, that city. Manufacturers are requested to send samples and catalogs.

Bealer & Biggers, architects, announce the opening of offices for the practice of architecture at 807 Grant Building, Atlanta, Ga. Manufacturers' samples and catalogs are requested.

Announcement is made that Alfonso Iannelli, architect, has opened an office for the practice of architecture at 250 West Park Avenue, Park Ridge, Ill.

Robert L. Harris, architect, announces the removal of his offices from the Calvert Building to 13 West Saratoga Street, Baltimore, Md., where he would be pleased to receive manufacturers' catalogs and literature.

Announcement is made that Harry J. Simmonds, architect, has opened an office for the practice of architecture at Room 109 Banner Building, Greensboro, N. C. Manufacturers' samples and catalogs are desired.

It is announced that John Albert Williamson, architect, has opened an office for the practice of architecture at 326 Moore Building, San Antonio, Texas. Mr. Williamson wishes to receive manufacturers' samples and catalogs.

William P. Lodge, architect, wishes to announce the opening of his offices at 1505 Commerce Building, Kansas City, Mo. He requests manufacturers to send him booklets or other information for his specification files.

Robert M. Hyde, Architect, has announced that owing to the death of his partner, Arthur V. Brown, he will continue to practice his profession under the name of Robert M. Hyde, architect, in the offices at 8 South Dearborn Street, Chicago, Illinois.

Announcement is made of the recent death in Little Rock, Ark., of Frank M Blaisdell, a civil engineer and architect, formerly of Boston, Mass. He had just completed work on a group of college buildings at Little Rock, and had designed many large parks and buildings throughout the country.

William C. Fitcomb was recently appointed assistant professor of architectural design in the Department of Architecture at the University of Illinois, Urbana, Ill. Mr. Fitcomb occupied this position from 1913 to 1917, resigning to go into war work with the American Red Cross with which he has been connected until the present time.

The firms of Buckley & Prins, architects and engineers, of Minneapolis, Minn., and Foss & Foss, architects, of St. Cloud, Minn., beg to announce the consolidation of the two firms under the name of Prins, Buckley & Foss, architects and engineers, with offices at 629 Palace Building, Minneapolis, and Phoenix Building, St. Cloud, Minn.

XUM

DECORATION FOR UNION MARKET NATIONAL BANK, WATERTOWN, MASS.
DESIGNED BY ANDREW T. SCHWARTZ

DENNISON & HIRONS, ARCHITECTS OF THE BANK

(Thirty-seventh Annual Exhibition, The Architectural League of New York)